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# Worldwide Report

TELECOMMUNICATIONS POLICY,  
RESEARCH AND DEVELOPMENT

No. 292

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2 November 1983

WORLDWIDE REPORT  
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

No. 292

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## INDONESIA

### BRIEFS

'POLLUTION' BY FOREIGN BROADCASTS--Information Minister Harmoko said the Indonesian airspace has been polluted by foreign broadcasts as a result of technological progress in mass communications. Therefore, to balance the pollution of the Indonesian airspace by foreign broadcasts, the government will this year start to build a broadcasting station for Radio Republik Indonesia with a peak capacity of 250 kw at Cimanggis, south of Jakarta. Another station with the same capacity will also be built next year in Medan, North Sumatra. When lecturing a course for national [word indistinct] in Medan, Minister Harmoko also said in the near future the direct broadcasting by satellite, DBS, will appear in Indonesia, making it possible for Indonesian television viewers to watch television programs from other countries, such as Malaysia, Singapore, Thailand, and others. [Text] [BK091316 Jakarta International Service in English 0800 GMT 9 Oct 83]

CSO: 5500/4303

DEVELOPMENT, FUTURE PROSPECTS OF SATELLITE COMMUNICATIONS

Beijing DIANZI XUEBAO [ACTA ELECTRONICA SINICA] in Chinese No 4, 1983 pp 36-37

[Excerpt] III. Suggestions on Developing China's Satellite Communications Technology

Satellite communications technology plays an important role in the development of China's communications industry. The electronics community in this country has been closely monitoring the evolution of this technology. During the early 70's, attempts were made to establish international communications links by importing a few ground stations. It was an important goal of China's communications community to develop this technology on our own. At the outset, we concentrated on digitalized systems, but we also emphasized the use of well-established and conventional frequency modulation systems for telephone, television and newspaper fax transmissions. In frequency selection, we started with the C band in order to be consistent with international conventions. Our research efforts were generally carried out under these ground rules. Experimental stations were subsequently built in a number of cities; the experimental antennas used had apertures ranging from 15 m to 3 m or even smaller. In 1977, transmission tests were conducted between the Shijianzhuan experimental station and several ground stations with analog equipment. In 1978, with the cooperation of West German and French agencies and companies, experiments were carried out using the Symphonia satellite to transmit television, telephone, telegraph, data, and video signals and to broadcast time and frequency standards; the results were very encouraging. In 1982, with the cooperation of the International Communications Satellite Organization, experiments were conducted using the transponders or orbiting satellites to transmit television, telephone, data and meteorological information; tests were also performed on transmissions using (TDMA) systems. In addition, government agencies in China performed experiments of receiving and relaying television signals in the C, L, K bands by using existing television broadcasting satellites. All these efforts contributed useful knowledge and experience to the development of China's communications industry. But more importantly, the series of research and experimental programs not only provided strong motivation for the development of antenna systems, tracking servo systems, transmitters and receivers, and the development of such key technologies as multiple address modulation and demodulation schemes, but also trained a team of key personnel who can contribute to the future development of this technology.

Clearly, an extremely important task in establishing China's satellite communications industry is to develop geosynchronous satellites. From the perspective of developing a satellite communications system which would be most suited for China's special requirements, the author offers the following suggestions:

1. Improve on M-SCP systems; establish on the basis of needs a flexible communications network between remote regions of the country and central cities; also, establish a low-capacity user-oriented digital satellite communications network.
2. On the basis of technologies used in international marine satellite communications, develop our own shore stations and shipborne stations.
3. Improve upon C-band ground station technologies such as high-gain low-sidelobe antennas, orthogonally polarized frequency multiplexing schemes, multiband antennas, highly stable, next-generation low-noise amplifiers, miniaturized GaAsFET frequency converters, program-controlled terminals, and small high-efficiency microwave power amplifiers.
4. Develop the practical use of K-band in television relays and communications.
5. Combine the development of educational television and network television. Intensify the design efforts of C-band satellite television relay systems and integrated receiving systems, and engage in equipment research in order to promote large-scale development of television education in literature, science, engineering, agriculture, medicine, law and special vocations, and to enable all ethnic groups to broadcast their own television programs.
6. Develop TDMA terminals with sufficient speed to interface with ground based TDM microwave relay equipment; implement digital language interpolation and distribution schemes according to needs; with the aid of experiments, establish a reliable communications network among high-capacity users, and further establish a centralized digital satellite communications network for business applications.
7. Further develop language-coding techniques and engage in the research of echo cancellation devices and digital satellite television relay equipment.
8. Carry out experimental research of the interface and command transmission between satellite communications network and ground-based communications network, so as to combine the two networks into a solid entity.
9. Study practical means of using computers in a satellite communications network in order to provide a stronger technical base for data transmission and exchange, and to fully exploit parcel exchange techniques.
10. To support the expanding national economy, engage in the research and development of special-purpose satellite communications network for meteorology, hydropower, geology, earthquake research, energy exploration, economic planning and financial management.

11. Develop satellite communications systems to meet the requirements of modernizing the nation's defense.

12. In conjunction with the development of satellite communications systems, initiate a full-scale program to study the theoretical and experimental aspects of design reliability; strive to improve the reliability of both individual components and overall systems.

#### IV. Conclusion

The geostationary orbit in outer space is a limited and extremely valuable resource. To utilize this resource requires dedicated efforts and contributions from our electronics community, particularly from the communications engineering industry and organizations in charge of the management and operation of communications satellites. This is one of the reasons for sponsoring activities of the World Communications Year in this country. This goal can undoubtedly be achieved because of the superiority of socialism, the plans and policies specified by the 12th CPC Congress, and the cooperative efforts among various regions, departments, and industries. Although the suggestions offered in this article are rather superficial, we are confident that as long as our colleagues and comrades working in the management, research, production, operation, education and support functions of communications engineering can join forces toward the same goal, our satellite communications industry will proceed along a more practical and much improved path with accelerated pace.

3012

CSO: 5500/4179

MEASURES FOR MODERNIZATION OF CHINA'S DEFENSE COMMUNICATIONS SYSTEM OUTLINED

Beijing DIANZI SHIJIE [ELECTRONIC WORLD] in Chinese No 7, 1983 p 3

[Article by Li Li [2621 0500]]

[Excerpt] The technical standard of China's present defense communications equipment is still far behind that of the industrialized nations. In order to meet the needs of modern warfare, we must accelerate the pace of modernizing China's defense communications system. Comrade Deng Xiaoping pointed out: "China's affairs must be handled by the resources of the Chinese people according to China's present circumstances." This principle should also be followed in developing China's defense communications system. We should proceed in our own way based on China's current situation. By taking into consideration China's strategic policies and command principles, as well as its economic base and unique language characteristics, we should devote our efforts in the following areas:

1. Developing new communications techniques, increasing communications capacity, and improving communications quality. We must develop multi-mode, multi-function, and versatile shortwave and ultra-shortwave radio stations; we must develop digital electric cables, microwave relays, scattering communications, satellite communication, and laser communication in order to increase communication capacity. We should also improve communication security by concentrating on security research.
2. Using electronic computers to achieve automation of communication systems. In order to achieve real-time capability in troop command, weapon control, and intelligence processing, we must extensively use electronic computers and program-controlled switching units to automate switching and network operations, maintenance, management, and security. This will reduce the time required for information transmission and enhance communication effectiveness. The real-time capability is particularly important for military units in the Air Force, Navy, and Missile Command.
3. Devoting efforts toward the standardization, classification, and serialization of communication equipment in order to improve the interchangeability between systems. Future warfares will be carried out in three dimensions: on the ground, in the air, and over the ocean. In order to have interchangeable strategic and tactical command systems, all the communications

equipment must be standardized, classified, and serialized. This will facilitate the establishment of unified military commands to carry out coordinated warfare, and also improve the operational efficiency of war-time communication.

4. Improving system survivability in order to ensure communication stability. Under battle conditions military communication systems are subject to enemy fire, electronic interference, and the effects of nuclear electromagnetic pulse. For this reason, measures of engineering reinforcement and dispersed deployment schemes must be considered, and the network structure must be hardened against damage. Also, anti-jamming techniques such as spread spectrum and frequency hopping and protective measures against damages due to nuclear electromagnetic pulse should be implemented to improve the survivability and stability of the communications system.

In addition, efforts must be made to develop Chinese-character information processing systems based on the special features of the Chinese language, so as to improve the rather cumbersome and inefficient way of handling Chinese characters in input and output information flow.

In a report presented at the 12th Party Congress, Comrade Hu Yaopang outlined the strategic measures for full-scale development of China's post and telecommunications industry. This provided a tremendous incentive for developing our defense communications capability. As the activities of the World Communication Year begin to unfold, we must follow the guidelines of the 12th Party Congress, dedicate our efforts to practical innovations, and establish a sound management system which combines utility, scientific research, and production. With the support of the electronics industry and the Ministry of Post and Telecommunications, both military and civilian personnel must join hands to strive for the goal of modernizing China's defense communications system!

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CSO: 5500/4175

DEVELOPMENT OF COMMUNICATIONS SYSTEM PROJECTS IN CHINA

Beijing DIANZI SHIJIE [ELECTRONIC WORLD] in Chinese No 7, 1983 pp 4-5

[Article by Zhou Guating [0719 0948 8203]]

[Text] A communications system project is often connected with projects of broadcast and television systems. It is a joint product of advanced electronics technology, system engineering, and engineering practice. It can be either an independent system or an important component of a large, modern engineering project. Development of communications system projects will allow the electronics industry to provide better service toward the modernization of the national economy; it is one of the important indicators of a nation's "electronic standards" in its modernization effort. The China Communications Project Company can undertake development projects of communication, broadcast, and television systems, and provide services of consulting, planning, overall technical design, circuit design, engineering design, equipment procurement (including instruments and gauges), personnel training, assembly and testing, system test operation and validation for a variety of projects. It is not only knowledgeable in the area of advanced electronics technology and equipment, but also has experience in applying system engineering to design and practical problems; it can solve system engineering problems faster and more efficiently than the manufacturers or users themselves can. In recent years, the China Communications Project Company has been involved in tens of projects of various sizes; most of the projects have been completed with good results, a few are still underway. A number of project examples in the areas of digital microwave communication, shortwave communication, and ultra-shortwave communication are illustrated below.

Digital Microwave Communication Projects

Digital microwave relay communication is an advanced communication technique which has a number of desirable features: large capacity, high quality, good security, and high degree of equipment integration. Many countries have devoted a large amount of their resources for its development to replace the original analog communication system. China is also spending a great deal of efforts to develop this type of communication system.

1. The Shanghai-Jinan Digital Microwave Relay Communication Project. This is a dedicated communication trunk line for the Huadong network of the Ministry of Hydropower; it is also the longest digital microwave circuit that China has built with Chinese-designed equipment. It has two main branches: the Shanghai-Xuzhou line and the Taijizhuang-Jinan line, which are joined together at Xutang and Taijizhuang. It connects all the important power plants, power supply stations, transformer stations, as well as the administrative and control systems along the trunk line in Shanghai and in Jiangsu and Shandong provinces. It is connected to the Shanghai-Zhejiang microwave communication line at Shanghai; it is also connected to the Shanghai-Huaibei microwave circuit at both Shanghai and Xutang to form two parallel and interchangeable circuits, thus making Shanghai the communication center of the Huadong power network. At Jinan it is connected to the Jinan-Chindao microwave circuit, which extends northward to Dezhou and Shijiazhuang, and may be linked to the Beijing-Hankou microwave circuit of the Ministry of Hydropower, and to the control center in Beijing. At Beijing it is connected to the Beijing-Shenyang communication circuit. Once completed, this line will also be an important communication line for the Ministry of Hydropower.

This communication circuit uses the Chinese-made 6000 MHz, 120-channel pulse code modulation (PCM) equipment with a data rate of 8448 kb/s. The main components have the following features:

(1) improved Cassegrain antennas with 3-meter aperture, bi-polarization, and a gain of 43 dB; (2) 6000-MHz microwave relay units with a data rate of 8448 kb/s and a bit error rate of  $10^{-6}$  over the 2500-km range; the operating band and frequency assignment comply with international standards; (3) quadratic group multiplexers which can multiplex four 2048 kb/s channels; the 2048 kb/s basegroup can be either 32 channels PCM or 64 channels delta modulation ( $\Delta M$ ); the system uses synchronous multiplexing with buffer storage units, and has a circuit design which prevents asynchronous bits from being transmitted downstream. The multi-channel data multiplexing unit operates asynchronously; it can process 16 channels of data at 75 bps, or 8 channels of data at 600 bps, or 2 channels of data at 2400 bps, and occupies only one  $\Delta M$  channel. It has digitally-controlled telephone system, in which one main station can coordinate with 48 substations to form a telephone network, and also occupies just one  $\Delta M$  channel.

The unique feature of this line is that it contains both PCM basegroup and  $\Delta M$  basegroup. Not only does it provide direct links between the pivotal stations and terminal stations of Shanghai, Ningbo, Jinan, and Nanjing (with extension terminal lines), and high-quality communication lines over long distances with multiple relays, it can also increase the capacity to provide flexible service to users located along the trunk line. This is an innovative design based on China's present circumstances.

This line extends approximately 1200 km, and has 37 microwave stations. The total project investment is over 20 million yuan (60 percent is equipment cost), and the total floor space constructed is 7450 square meters. Since the project began in October, 1980, we have completed the overall technical

design, circuit design, engineering survey and engineering design, and the training of technical personnel; we have also completed most of the manufacturing and testing of equipment, and part of the construction work. Currently, the three installed stations at Taijizhuang, Dongzhuang, and Xuecheng have already been delivered for trial operation in April of this year. The entire project is expected to be operational by next year.

2. The Lanzhou-Liujiaxia Digital Microwave Communication Line. This line is strategically located to serve hydropower communication in China's northwest region; it links the hydropower communication lines of Shaanxi, Gansu, Qinghai, and Ningxia, and plays an important role in providing communication for the northwest electric power system and the flood prevention system of the upper reaches of Huang He. This line was modified from an existing circuit and uses 2000-MHz PCM 120-channel unmanned microwave systems. The modification effort took over one year and test operation began in October, 1982. Although the line is short, it requires constructing relay stations in mountainous regions with difficult terrains; the unique feature of this line is its relay stations with no operators.

3. Liao He Oil Field Communication Project. This is an oil field communication network that has been under continuous improvement. At the command center and the three communication stations located in the primary oil producing regions of Huanxilin and Shugang, local and long-distance automatic switching units and 2000-MHz 64-channel PCM digital microwave relay systems are used to form a long-distance and local communication network with digital telephone and analog switching. It can transmit digital telephone and data information, providing long-distance communication with fully automatic dialing.

4. The Dexintong Base Digital Microwave Communication Project. It uses 2000-MHz  $\Delta$ M 64-channel microwave relay systems as communication trunk lines for mining regions; it also uses shortwave and ultra-shortwave branch circuits to link the scattered mines located in northwest Jiangxi province, thus forming a dedicated communication network.

5. The Digital Microwave Communication Project Linking the Meteorological Center of the Central Meteorological Bureau and the Dongbeiwang Satellite Ground Station. This is a digital microwave communication system with a frequency band of 2000 MHz and a data rate of 8 megabits/second. It can transmit the multi-channel, high-speed data received by the ground station from the "TIROS N" weather satellite to the Meteorological Center. Its equipment include multi-channel asynchronous data multiplexing devices and quadratic group, basegroup, and digital microwave relay units. This project was delivered for operation last year.

6. Phase One Communication Project at the Zhangjiang Base of the Nanhai Petroleum Exploration Command Post. This project is designed to establish a communication switching center at the Zhanjiang base, and provides medium-shortwave, ultra-shortwave, and microwave communication links to other bases of the Nanhai oil field, off-shore platforms, ships, and field units of the command post. It is a complete, flexible, and highly automated

communication project. At present, the overall technical design and preliminary engineering design have been completed; the entire project is expected to be completed by 1984.

#### Shortwave Communication Projects

Shortwave communication can reach long distances (several thousand kilometers) and requires relatively simple station facilities. But its capacity is small, and its stability and reliability are poor because it is affected by ionospheric fluctuations. Therefore, it is only suitable for use in point-to-point long-distance communication lines where other schemes are economically not feasible. Most shortwave communication uses single sideband systems.

1. Longyangxia Shortwave Communication Project. This is an important part of the Huang He flood prevention communication network. In 1981, it played an important role in flood prevention along the upper reaches of Huang He. Specifically, it provided timely and accurate reports of the water level at Longyangxia to the flood prevention command center in Lanzhou, so that proper decisions could be made to coordinate the available manpower to avoid a dangerous situation during the flood season.

2. The Shortwave Receiving Center Project for the Bureau of Oceanography. This project provides a solution to the problem of redeiving oceanic survey data from Bei Jai, Dong Hai, Nan Hai (including parts of international waters), and processing the data for distribution. It is a multi-point-to-fixed point communication line.

3. The Shortwave Communication Project for Monitoring the Water Conditions of the Chang Jiang. This is a flood prevention shortwave communication network established by the Chang Jiang Planning Office to forecast river conditions in the mid and upper reaches of Chang Jiang. The water conditions in this reion is highly unpredictable and normal flood prevention work is severely hampered due to the shortage of transportation and public communication. Once this network is completed, it will make significant contributions to future flood prevention in the mid and upper reaches of the Chang Jiang.

#### Ultra-Shortwave Communication Projects

Ultra-shortwave communication is more stable and more reliable, and has better interference rejection capability. Currently, most ultra-shortwave communication systems use frequency modulation; some use single sideband or amplitude modulation. Ultra-shortwave radio stations are also small in size, low cost, easy to install, and flexible operationally, provided its capacity is not too large. It can be used for either point-to-point or point-to-multipoint communication; it can also be used for multi-channel relay communication within a range of 200 km. Ultra-shortwave communication is increasingly being used in mobile communication applications. It can form an independent communication network with one to three stages; equipped with selective paging units and control units, it can provide automatic

frequency selection and can tie into the city public telephone network. By incorporating a single board or a microprocessor in the system, it can also provide automated data collection and processing. Clearly, the future application of this type of communication system is unlimited.

Many of the ultra-shortwave communication projects are built by the users themselves, but they also account for a majority of projects contracted by this company.

1. The Automated Water Monitoring and Reservoir Regulation Project for Zhejiang Wuchijiang Hydropower Plant. In order for hydropower plants and hydrology systems to fully utilize water resources and to prevent flood damage, a water monitoring system must be established to report on the river conditions upstream. At the present time, most water and rain reporting in China is still rather primitive; the automated water monitoring system at the Wuchijiang hydropower plant is an attempt to change this picture. This system includes the following components: 1) automated hydrological and rain data collection system; 2) ultra-shortwave data transmission system; and 3) data processing system. The network contains 18 hydrology stations and rain measuring stations which are connected by telephone and data transmission lines. This allows the coordination center to process the collected data for efficient regulation of the reservoir or for taking emergency measures to prevent the occurrence of floods. This project is expected to be completed during 1983 or shortly after. Future efforts will be concentrated on the development of unmanned ultra-shortwave communication systems.

2. The Radio Telephone Communication Network for the Shanghai Power Supply Bureau. This is a typical ultra-shortwave 3-stage communication network: 1) from the city power supply bureau to the district and county power supply offices--it has a maximum radius of 50 km, and covers 10 districts and counties of Shanghai; 2) from the district and county power supply offices to the mobile units--it has a maximum radius of 30 km, and has selective or all-unit paging equipment; 3) from the mobile units to the individual operators--it has a maximum radius of 3 km. The coordination center can also use single-function equipment for broadcasting or paging within the power supply bureau. The base station operates at a frequency of 400 MHz, and the single-function units operate at a frequency of 150 MHz.

3. The Radio Communication Project for Train Coordination Along the Fengtai-Shacheng-Datong Railroad. The purpose of this project is to increase the rate of coal shipment from Shaanxi province, to increase the efficiency of rail transportation, and to convert to electrically operated trains. Without radio communication to coordinate the trains, it is difficult for the trains to operate in an automatic blocking mode, and to reach the goal of electrical conversion. After two years of test operation of the prototype system, the feasibility of the design has been established, and this equipment is ready for implementation in actual operations.

The above are just a few examples of actual projects. However, our work is still unable to meet the needs of the national economy, while new requirements

are continuously being developed. These needs and requirements are precisely the incentives for developing our industry. China's electronic technology and electronics industry are progressing at a rapid pace; they will undoubtedly provide us with more and better communication equipment and instruments. For example, the successful testing of the PCM 480-channel microwave relay communication system, the certification of the TS-193 digital microwave scattering unit, the field application of optical fiber communication, satellite communication, and the development of other new communication equipment provide the material foundation for future expansion of our work. We believe that as a result of the "World Communication Year" activities, more emphasis will be placed on the basic construction of communication, and the development of China's communication system projects will undoubtedly continue.

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CSO: 5500/4175

PEOPLE'S REPUBLIC OF CHINA

PLANS TO LAUNCH COMMUNICATIONS SATELLITE DISCUSSED

HK070624 Beijing ZHONGGUO XINWEN SHE in Chinese 1417 GMT 6 Oct 83

[Report by reporter Su Rongjuan: "China Will Launch the First Experimental Communications Satellite at Year-End or Early Next Year" -- ZHONGGUO XINWEN SHE headline]

[Text] Shanghai, 6 Oct (ZHONGGUO XINWEN SHE) -- Vice Minister of Posts and Communications Zhu Gaofeng said that China would launch the first experimental communications satellite at the end of 1983 or early 1984. This is China's new attempt in developing a communications satellite.

Zhu Gaofeng made the remarks at a national satellite communications symposium which was held in Shanghai. He believed that since this symposium was held in China in World Communications Year, it provides good opportunities for reaching new techniques in satellite communications as well as providing experience for China's satellite development.

Zhu Gaofeng said: As early as at the beginning of the 1970's, China had already established and developed satellite communications, and later established three standard ground stations with 30-meter-long antenna in Beijing and Shanghai. In addition, China has also been carrying out research work on the equipment for satellite communication ground stations. From June to August 1982, China conducted a large-scale and relatively comprehensive national satellite communications experiment by making use of a transmitter of the international communications satellite above the Indian Ocean region. The experiment created the necessary technical conditions for China to rent a transmitter of an international communications satellite, and to organize national satellite communication.

On the characteristics of developing China's satellite communications, he pointed out: The present foundation of communications in China is weak. The distribution of population and economy of China is not even, and the present means of communications are too few to meet the country's demand in national construction. Therefore, we need to develop these communications means which require less investment and less time in construction in light of some foreign experiences and the specific conditions in China. And satellite communications are an ideal means of communications. In the wake of the constant development in economic construction and in science and technology, China will gradually establish a national satellite system by the turn of this century. He sincerely hoped that Chinese residing abroad, Taiwan compatriots, Hong Kong and Macao compatriots, and foreign nationality Chinese will suggest ways and means for China's national satellite communications cause.

CSO: 5500/4141

ADVANCES OF DIGITAL MICROWAVE RELAY COMMUNICATION SYSTEMS IN CHINA

Beijing DIANZI XUEBAO [ACTA ELECTRONICA SINICA] in Chinese No 4, 1983 pp 23-28

[Article by Kong Xianzheng [1313 2009 2973]]

[Excerpts] Digital microwave relay communication system is a new technology which has been undergoing rapid development during the last decade. It is an important aspect in the so-called "digitalization revolution." Currently, developed nations have progressed from the research and development [R&D] stage to the application stage; it is a revolution where digital microwave relay communication techniques are used to gradually modify and replace the original analog microwave systems. Within the past 10 years, China has devoted a significant amount of effort to the R&D in this area and has made notable progress; it has also taken steps toward applying this technology but at present it is still far behind developed nations. Fortunately, digital microwave relay communication has been designated as a key development item in this national economic plan, which will undoubtedly create favorable conditions for accelerating its future development. With this background information, it is clearly of interest to present a review of the current status of digital microwave relay communication technology in China to attract wider attention from all concerned parties.

Efforts Made by China's Industrial Community

As pointed out earlier, during the late 1950's and the early 1960's, China had already begun exploratory work in the area of digital communication technology. To meet the needs of the expanding national economy, research efforts in the application of this technology were started in the early 1970's. In the mid-1970's, the accelerated development of China's petroleum and electric power industries imposed urgent demands on digital microwave relay communications. As a consequence, in 1975 the Ministry of Electronics Industry organized an effort to develop an integrated PCM-120 channel (quadratic group) digital microwave relay communication system; by 1978 a prototype system was completed. During 1979-80, the individual component designs were finalized and put into production and engineering use. In 1981, another effort was initiated to develop an integrated PCM-480 channel (cubic group) digital microwave relay communication system; this work is progressing smoothly and the design is expected to be finalized in the near future.

Table 1. Typical Examples of Digital Microwave Relay Communication Systems

Country	Frequency band (GHz)	Capacity (Mb/s)	Modulation system	Frequency spectrum utilization rate (Mb/sMHz)
China	6	35-70*	3 PRS	1.2/2.3*
Great Britain	11	140	4 PSK	2.1
Canada	8	90	9 QPRS	2.3
United States	6	90	8 PSK	3
France	11	140	16 QAM	3
Japan	5	200	16 QAM	5

\*Polarized complex utility

Table 2. Frequency Spectrum Utilization Rate

Country	System name	Wave channel bandwidth (MHz)	Voice channel/ MHz	Information rate (Mb/sMHz)
Japan	5GHz/16QAM	40	78/156*	5
	SSB-5400	40	132.5	1.27
	FM-2700	40	67	0.64
China	6GHz/3PRS	30	32/64*	2.3
	FM-1800	30	60	0.57

\*PCM/ADPCM

Table 4. Some of the Digital Microwave Communication Equipment Produced in China

Number	Digital coding and complex utility equipment	Digital microwave transmission equipment
32	Incremental modulation voice channel-encoder-decoder	
64	Pulse modulation voice channel encoder-interpreter	
128	4-channel incremental modulation complex utility equipment	150MHz relay
512	16-channel " " " " "	5GHz scatterer
1024	32-channel " " " " "	11GHz relay
2048	64-channel " " " " "	2GHz relay
	32-channel pulse code modulation complex utility equipment	
8448	Secondary group complex utility equipment	2,6,8GHz relay
34368	Triple group complex utility equipment	2,6GHz relay

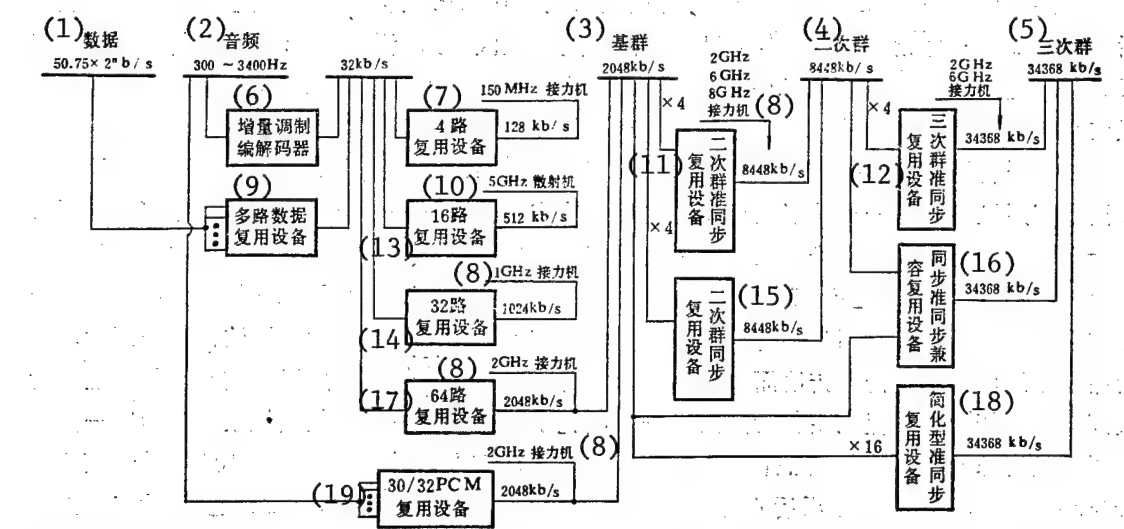


Figure 3. Equipment Modular Structure of Digital Microwave Communication Systems Produced by China's Industrial Departments

Key:

- |  |   |
|--|---|
| (1) Data   | (12) Triple group quasi-synchronous complex utility equipment     |
| (2) Audiofrequency   | (13) 16-channel complex utility equipment                         |
| (3) Basic group  | (14) 32-channel complex utility equipment                         |
| (4) Secondary group  | (15) Secondary group synchronous complex utility equipment        |
| (5) Triple group   | (16) Synchronous quasi-synchronous complex utility equipment      |
| (6) Incremental modulation encoder-decoder                       | (17) 64-channel complex utility equipment                         |
| (7) 4-channel complex utility equipment                          | (18) Simplified model quasi-synchronous complex utility equipment |
| (8) Relay  | (19) 30/32 PCM complex utility equipment                          |
| (9) Multiplex data complex utility equipment                     |   |
| (10) Scatterer   |   |
| (11) Secondary group quasi-synchronous complex utility equipment |   |

Table 4 lists several Chinese-made digital microwave relay communication equipment and the associated time-division multiplexing equipment. The capacities of these types of equipment are consistent with those recommended by CCITT above the basegroup rate of 2048 kb/s; in the subgroup portion (below 1024 kb/s) no recommendation has been made by CCITT.

The pulse code modulation (PCM) multiplexing equipment uses the 13 zigzag nonlinear codes described in rule A, recommendation G711 of CCITT; each voice channel has a code rate of 64 kb/s, and each basegroup consists of 32/30 channels, with an overall data rate of 2048 kb/s. This design has been adopted by most countries except those which were pioneers in digital communications, such as the United States, Japan and Canada.

The delta modulation multiplexing equipment currently being produced in this country uses the high-frequency preemphasis sum delta modulation coding system, each voice channel has a code rate of 32 kb/s. Depending on the application, the subgroup and basegroup may be composed of 4, 16, 32 or 64 channels.

The 4-channel multiplexing which produces an overall data rate of 128 kb/s, can be used for mobile communication via 150 MHz UHF relays. The 16-channel multiplexing which produces an overall data rate of 512 kb/s, can be used for long-distance communication via scattering transmitters. The 32-channel multiplexing which produces an overall data rate of 1024 kb/s, can be used on short-range circuits connecting trunk line stations and user stations via 11 GHz relays. The 64-channel multiplexing which forms a 2048 kb/s basegroup, can be used on low-capacity circuits in mining regions via 2 GHz relays.

There are two kinds of quadratic group multiplexing equipment. One is a pseudosynchronous multiplexing device which is based on the principle of positive code rate regulation and is designed according to recommendation G742 of CCITT. The other is a synchronous multiplexing device which is designed according to the special requirements of dedicated users--long range, multiple stations, or high-activity branching. Since this type of equipment does not have the insertion ripples which are present in pseudosynchronous equipment during the multiplexing process, it is not subject to the constraints on the number of band splits imposed by the analog reference circuit, as specified in recommendation G721 of CCITT, and therefore allows high-activity branching. Also, since it does not have the insertion instruction code as required by the pseudosynchronous code rate regulating system, it will not suffer slippage of information flow when matched with digital microwave channels due to transmission error in the instruction code caused by fading. In addition, special consideration was given to the channel-fading characteristics to provide extended protection to the rescanning process for frame synchronization, thus eliminating the unnecessary high-activity scanning and reducing the probability of information slippage. This type of synchronous quadratic group equipment can multiplex two 1024 kb/s and three 2048 kb/s channels, resulting in an overall data rate of 8448 kb/s, which is consistent with the data rate recommended by CCITT for quadratic group. The quadratic group digital microwave relays have three different bands: 2, 6, and 8 GHz; they all use 2PSK modulation system with solid state components. The quadratic group digital microwave systems are suitable for industrial communication or for regional trunk lines in other communication systems.

The cubic group digital microwave relay system is primarily used to establish long-distance trunk lines for the Ministries of Communication, Transportation and Energy. Its technical design is more complicated because it must consider not only the special requirements of individual ministries but also the possibility of establishing a nationwide digital communication network by these ministries. Currently there are three different types of cubic group equipment being developed. One is a pseudosynchronous multiplexing device which is based on the principle of positive code rate regulation and is designed according to recommendation G751 of CCITT. The second is a  $+0/-$  code rate regulated multiplexing device which is developed on the basis of recommendation G753 of CCITT, and contains branch channels with two different rates: 2048 kb/s and 8448 kb/s; it is more flexible and more efficient in terms of equipment capacity because it can provide both 8448 kb/s and 2048 kb/s branching in a long-distance communication link. Furthermore, the  $+0/-$  code rate regulated multiplexing device can be easily adapted to a synchronous digital network in the future. The third is a cubic group multiplexing device in which 16 2048 kb/s channels are directly multiplexed to form 34368 kb/s using the principle of positive code rate regulation. Through careful design and manufacturing, the insertion ripple of this type of equipment is much smaller than the value of 0.25 UI as specified in recommendation G703 of CCITT; hence it can be used for long-distance communication circuits with high-activity and low-capacity channels.

There are two types of cubic group digital microwave relays: the 2GHz-band relays use the 4PSK modulation system; the 6GHz-band relays use the 3PRS modulation system in order to avoid orthogonal interference during signal fades. They are all made of solid state components with space diversity features. The Chinese-made FET power amplifier used on the 6GHz relay replaces the traditional traveling wave tube (traveling wave tube amplifier with its associated power source is the least reliable component and has the shortest lifespan in a microwave communication system) in order to provide longer life and easier maintenance for the microwave relay communication equipment.

The components described above can be used as building blocks to form communication systems of different capacities.

In addition to the development of digital microwave relay communication systems efforts were also made to develop essentially maintenance-free, low power consumption microwave relay stations. These stations are solar-powered and use prefabricated housing so it is possible to establish microwave relay transmission circuits in sparsely populated desert and mountainous regions.

As the above description indicates, at the present time China's industrial organizations are capable of providing complete technologies and products for digital microwave communication systems with less than cubic group (PCM 480 channels) transmission capacity. It should be emphasized that the materials and components used in these products are all made in this country; therefore, the necessary conditions exist for large-scale application of these systems. Of course, efforts must be made by the electronics industry to mass-produce these products and the product performance and quality must be further improved. These are problems that must be addressed in the next few years.

## Conclusion

The development of a new technology or a new equipment depends not only on research and production, but also extending its application. Because once this technology or equipment is accepted, not only may its manufacturing cost be reduced, but more importantly, the technical and economic information obtained from actual use will drive efforts in basic research, applied research, and technical development toward new frontiers, thus maximizing its economic benefits and providing motivation for growth in trained personnel. Since 1978, we have provided several kilometers of digital microwave relay communication equipment for a number of dedicated communication networks in this country. The total length of digital microwave circuits which use domestic equipment has exceeded the length of circuits using imported equipment. The situation will be more encouraging when we are successful in developing digital microwave relay communication equipment with higher than cubic group capacity and begin mass production. Therefore, in order to accelerate the development of this new generation of communication system, we must start from our current foundation, keeping in mind the needs of the four modernization program, and address the key issues of further improving the cooperation among scientific research, production, utility, and education organizations, and increasing the overall economic benefits. This is an important part of the activities of the World Communication Year sponsored by the United Nations. We shall continue to contribute our efforts to this activity.

3012

CSO: 5500/4181

SHANGHAI SEMINAR VIEWS SATELLITE COMMUNICATIONS

OW131215 Beijing XINHUA in English 1151 GMT 13 Oct 83

[Text] Shanghai, October 13 (XINHUA) -- The domestic satellite communications system to be set up in China will cover the mainland, Taiwan and other islands in the South China Sea, say Chinese experts at the international seminar on domestic satellite communications. The system will make telephone, telegraph, data, facsimile, television and radio broadcast services available to the remotest areas.

The system will be a vast network with main regional, provincial and county ground stations all over the country. High capacity ground satellite stations will be set up in major cities in east China and low capacity units in western China. Main regional centers will be directly interlinked and provincial, prefectural and county centers will form regional networks using medium and low capacity satellite ground stations. The eight-day seminar which closed here yesterday was sponsored by the Chinese Ministry of Posts and Telecommunications and the Radio Consultative Committee of the International Telecommunication Union.

Experts from 25 countries on five continents discussed many aspects of satellite systems in national communications, from current practice to future possibilities. They also exchanged opinions on the range of usable frequencies, transmission and access techniques and satellite systems designed for rural village communications. Jena Jipguep, deputy secretary general of the International Telecommunication Union, made a special trip to Shanghai for the closing session.

The 29 Chinese experts at the seminar, most in between 40 to 50 years old, presented 17 papers. Lin Pinxiang, engineer, and Ni Zhaojing, chief engineer from the No. 1 research institute of the Ministry of Posts and Telecommunications, submitted a paper on ways to simplify the computation of interference between geostationary satellite networks. The aim is to find the most economical way to use the limited resources of the satellite orbit and spectrum. They stated that the geostationary satellite orbit and spectrum are limited resources that should be shared by all countries, big or small. Their paper won general approval. Wang Mingzhong, an engineer who studied at the Taiyuan engineering institute, discussed a distributed controlled, fully variable demand assigned system. Simple, flexible and cost-effective, the system would make telephone service in all parts of the country as convenient as in big cities by making the most effective use of satellite channels.

During the seminar, participants visited the Shanghai experimental satellite communications station and communications equipment factories.

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

JIAMUSI LONG-DISTANCE COMMUNICATIONS CENTER--The Jiamusi long-distance communications building project was officially put into operation on 30 August 1983. This project, which provides 20 additional long-distance lines, will ease the tight situation in long-distance communications service in Hejiang Prefecture and Jiamusi Municipality. [Text] [Harbin HEILONGJIANG RIBAO in Chinese 31 Aug 83 p 1]

SHANGHAI TELEVISION STATION--The news department of the Shanghai television station will formally telecast the special news program "International Outlook," beginning on 15 October. "International Outlook" is a comprehensive international news program which, in addition to news, also features reports on general knowledge, ideology and general interest. It will be telecast semi-monthly at 1845 on Saturdays on Channel 8. The program lasts 20 minutes and there will be a replay the next day on Channel 20. In tomorrow's "International Outlook" program, viewers will see the major news of the past 2 weeks; commentary on international events, acute U.S.-Soviet disputes over the South Korean airliner incident; views of Japan's Yokohama city, a sister-city to Shanghai; and a strange view of a boa constrictor swallowing a calf. [Text] [OW151131 Shanghai City Service in Mandarin 2300 GMT 13 Oct 83]

CSO: 5500/4141

ARGENTINA

TRINATIONAL TELECOMMUNICATIONS MEETING ENDS

PY010008 Buenos Aires Domestic Service in Spanish 2000 GMT 29 Sep 83

[Text] The trinational telecommunications meeting held in Buenos Aires by representatives of Argentina, Brazil, and Uruguay has ended.

Measures regarding rural telephone service and radio and television services were adopted during the meeting. The meeting, which is the seventh to be held between the three countries, was held at the Central Post Office, where the post office secretariat is located.

A rural telephone service agreement was also drawn up. This agreement will be approved during the meeting to be held in Brasilia in 1984.

Among other measures, the representatives decided that over the next 18 months the rural telephone communications enterprises of the three countries will modify the technical specifications of the fixed and mobile stations which could cause interferences, so that each country can use all its allocated frequencies.

It was also decided that the public rural telephone service will have priority over the fixed and mobile stations in the bands between 146.6 and 173.3 kHz.

As regards short wave transmissions, the representatives analyzed the various kinds of interferences and decided to ask the International Frequency Registration Board to modify the regional plan in order to resolve the problem of interferences.

As for television broadcasts, the representatives analyzed aspects of the projects to set up television stations in border areas.

The representatives also furthered the study to improve the television frequency allocation plans of the three countries.

As regards the heads of the delegations that participated in the meeting, Engineer (Hector Vergara) headed the Argentine delegation, Engineer (Arthur Itazu) the Brazilian delegation, and Engineer (Luis Peluffo) the Uruguayan delegation.

CSO: 5500/2008

ARGENTINA

'SOBERANIA' SATELLITE STATION DEDICATED

PY111804 Buenos Aires Domestic Service in Spanish 2000 GMT 6 Oct 83

[Excerpts] [Announcer] Today we are here again, in Balcarce, ready for another astonishing achievement, the dedication of the terminus of the national communications system via satellite, which will allow us to cover the most distant places within our vast territory through the implementation of this program, known as the Soberania project.

Ladies and gentlemen, we will now listen to (William R. Fitzgerald), president of the Satellite Division of Harris Corporation.

[Begin Fitzgerald recording in English with simultaneous translation into Spanish] Mr Secretary, of Communications, Mr Administrator of ENTEL [National Telecommunications Enterprise], ministers, distinguished guests, ladies and gentlemen: It is a personal privilege and an honor for me to be here today representing the Harris Corporation at such a historically significant event, at this dedication of the national system of communications via satellite, known as the Soberania project. This year of 1983, the year of communications, is the most appropriate time to dedicate and put into service such a technically modern project as Project Soberania. The people of Argentina at all levels should all be proud of this unique technical achievement. Harris Corporation is also proud of its leading role in this event. Harris Corporation would like to compliment the people of ENTEL for their foresight and concern to plan and implement this domsat system, the largest in the world. This system is the largest domestic satellite system in the world. The Dama control system is the most technically modern in existence today. It also incorporates the world's most modern maintenance and control network. Nowhere in the Intelsat body of 107 countries is there one that [words indistinct] or technically better than that of this system.

[Begin Colonel Vicente Cerda Riveros, ENTEL administrator, recording] A total of 33 stationary ground stations with a wide range of capabilities and functions make up this new system. Many of these ground stations have been installed along the border with Chile and are called remote. Other stations, which are called alternative and emergency stations, are operating near the control network terminus. This ensures the continuity of its services in case of saturation or severance of relays. Furthermore, there are two maintenance and control stations which act as regional termini. One of these stations is located in La Rioja, and the other one is located in Comodoro Rivadavia. The system's terminus is here in Balcarce, adjacent to the international station. This terminus controls and operates the national communications system via satellite. To this end, this terminus is equipped with sophisticated equipment for assigning frequencies, reception and transmission of telephone calls, telex, radio, and color television, for remote control and for the maintenance of all other stations within the system. It is also equipped for recording and processing the necessary statistical data. [end recording]

FIRMS AGREE TO STUDY GOVERNMENT TELECOMMUNICATIONS PROPOSALS

Hamilton THE ROYAL GAZETTE in English 16 Sep 83 p 1

[Text]

Government's goal of introducing a high-tech telecommunication system into Bermuda took a solid step forward yesterday as a group of companies agreed to a joint in-depth study of proposals.

Companies agreed to form a consortium to investigate Bermuda's telecommunications needs, to identify the system best suited to the Island's needs and to work out a time frame for its implementation.

Agreement came at meeting called by Technology Minister the Hon. John Stubbs which including representatives from Belco, Telco, the three banks, Cable and Wireless, security firms, Cablevision and all branches of the media.

"We have crossed the Rubicon today," commented a delighted Dr. Stubbs.

"What really was so exciting was that finally there is a broad consensus that this issue is so important, so much bigger than any one of the participants, that we need to address it as a matter of some urgency."

The meeting followed on the heels of the this week's City Hall seminar on telecommunications which was attended by representatives of all the consortium companies.

Dr. Stubbs believed the seminar helped bring home the importance of moving quickly on telecommunications.

A key part of the seminar experts'

message was that rival Caribbean countries are now grasping the importance of advanced communications to the international business sector.

Bermuda could lose international business to its rivals unless it acts within the next five years.

Some of the seminar experts attended yesterday's meeting, Dr. Paul Polishuk of International Gatekeepers, Mr. Charles Sturtevant of Aetna Telecommunications Consultants and Mr. Brian Higgins of Northern Telecom.

"They attended the meeting to answer technical questions," said Dr. Stubbs. "There was the same sort of frank expression of special interest by some of the

company representatives but there emerged unanimous agreement to organise a consortium of all interested parties to undertake an analysis of Bermuda's present and future telecommunications needs, the best telecommunications system to meet those needs, and to determine the best time for implementing a broadband telecommunications system."

Continued Dr. Stubbs: "This meeting was small but there is no intention to exclude anyone who is genuinely interested in this subject.

"If there are any interested groups they should make their interests known to me before the next meeting."

NICARAGUA

NUNEZ OPENS TECHNICAL BROADCASTING COURSE

PA111616 Managua Radio Sandino Network in Spanish 1200 GMT 11 Oct 83

[Text] Commander Carlos Nunez Tellez, president of the State Council, said yesterday during ceremonies inaugurating the first technical training course in audio and radio-broadcast maintenance that those who work in this field must, through their labor, penetrate neighboring countries in order to show them that the Sandinist people's revolution does not have expansionistic interests in the region and to make them aware that they are under imperialist occupation.

Nunez added that the country's broadcasting systems should seek political, economic, biological, material, and technical perfection. He noted that strong men and women will be needed to achieve this objective, men and women trained in the zealous care of installations that the enemy will target for acts of sabotage. Nunez pointed out that Nicaragua must wage a great ideological battle in response to the enemy's increased defamation campaigns, the material for which often enters through our own borders.

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CSO: 5500/2006

NICARAGUA

FURTHER ON PEREZ HERRERO'S RESPONSE TO RADIO MARTI

FL070103 Bridgetown CANA in English 2245 GMT 6 Oct 83

[Text] Havana, Cuba, Oct 6, CANA -- Calling the U.S. Government's decision an "aggression" and a clear "violation of our country's sovereignty," a top Cuban leader yesterday denounced the 14-hour-a-day radio broadcasts to be beamed into Cuba shortly as a result of a new law signed by President Reagan last Tuesday.

Antonio Perez Herrero, alternate member of the Political Bureau of the Communist Party of Cuba and a member of its Secretariat, said Cuba could not possibly accept such a move, and would "respond in every way possible." Above all, he said, Cubans would answer with "the decision, energy, militancy and unity which have characterised our people for more than 20 years, in their confrontation (with U.S. hostility)." Perez Herrero said the new law represents not a simple war of radio waves, but "the confrontation of ideas and convictions which our people face without hesitation."

Over the next two fiscal years, 25 million U.S. dollars have been earmarked for the radio broadcasts which are designed, according to U.S. officials, "to tell Cubans the truth about Cuba." The programme will function with Voice of America (VOA) facilities, and special U.S. Navy transmitters set up in southern Florida.

CSO: 5500/2006

## MINISTER TELLS STEPS TO BETTER TELECOM SERVICES

New Delhi PATRIOT in English 20 Sep 83 p 5

[Text]

Minister of State for Communications V N Gadgil said on Monday a number of steps had been taken to improve the telecommunication services which were "below par during the last few months," reports UNI.

Addressing a meeting of the Consultative Committee attached to his Ministry in Delhi Mr Gadgil said telephone cables were being damaged by various public utility agencies while digging roads to provide other public utility services.

The damage did not come to the surface immediately. But during rains water seeped into the cables at the damaged points affecting service to a large number of telephone subscribers.

The Posts and Telegraphs Department had taken a number of steps to reduce these cable breakdowns, he added.

Mr Gadgil said the field units and the P and T directorate had well defined procedures to attend to public complaints and grievances regarding the telecommunication services. It had also full-fledged organisations to deal with complaints at different levels.

The officers of these units had been instructed to make themselves available for meeting the subscribers without any prior appointment on all working days, at least for one hour.

Referring to the complaints of MPs on dislocation and disruption in the telecommunication services, Mr Gadgil said a close watch was being kept on the performance of the telephone, telex and telegraph system in the country.

Mr Gadgil said statistical information on important performance parameters were analysed as part of the management information system for taking necessary remedial action. The increase in complaints in respect of telex service was due to "the congestion arising out of unfulfilled demand." The telex service would improve when the proposed electronic telex exchanges were commissioned in the four metropolitan cities, he added.

The annual plan for the P and T envisaged provision of 3.8 lakh telephone lines of additional capacity and opening of 700 new telephone exchanges in the country by next March. A total of 1500 public telephones would be opened during the period, he added.

The Minister said by July, more than 50,000 lines would have been added and 50 new exchanges opened to the existing capacity. During the period, 90 long-distance public telephones were

opened, he added.

Two factories to manufacture electronic switching system (ESS) each with an annual capacity of five lakh lines would be set up at Gonda in Uttar Pradesh and Bangalore. The Palghat unit of the Indian Telephone Industries would be expanded to produce 1.5 lakh digital lines to meet the demand, he said.

Meanwhile, to meet the immediate demand, an agreement had been made with a French firm to import two lakh lines of E-10B exchanges. The first such exchange would be set up at Worli in Bombay.

CSO: 5500/7011

COMMUNICATIONS OFFICIAL TALKS TO PRESS IN COCHIN

Electronic Phone Exchanges

New Delhi PATRIOT in English 12 Sep 83 p 7

[Text] Cochin, Sept 11 (PTI)--Two units for manufacture of electronic digital telephone exchanges each with a capacity of five lakh lines per annum with French collaboration are being set up at Bangalore and Gonda (Uttar Pradesh).

Disclosing this here today at a news conference, Union Minister of State for Communications V. N. Gadgil said the units would start full production in 54 months from now. While the cost of the Gonda unit for which civil works were already in progress, would work out to Rs 168 crore, the investment on the Bangalore unit would be less because some infrastructure facilities already there in the Indian Telephone Industries. The machinery and other equipments would need some modifications, he said.

Answering a question, Mr Gadgil said the Palghat unit of the ITI would be expanded to manufacture trunk exchange equipments also with French collaboration. It would have a capacity to produce 1.5 lakh lines per annum.

Mr Gadgil said the Union Government had also decided to go in for electronic digital telephone exchanges in future. The first 5,000 lines electronic exchange in Cochin city would be commissioned two years hence.

He said there were bound to be defects and deficiencies in the working of the postal and telecommunication systems, the postal system was handling nearly 1100 crores of letters, 17 crores of money orders and 12 crores of registered letters annually. Considering the heavy volume of traffic handled some minor delays here and there were bound to happen, he said. On the telecommunication side, the number of telephones in the country had gone up from 80,000 in 1947 to nearly 25 lakhs with Bombay city alone having five lakhs phones and another 1.5 lakhs in the waiting list.

### Try for Indigenous Components

Madras THE HINDU in English 12 Sep 83 p 9

[Text] Cochin, Sept. 11--Mr. V. N. Gadgil, Union Minister of State for Communications, today said all possible use of indigenous component supply would be made by the Indian Telephone Industries (ITI).

The Minister who was addressing a press conference here was asked about the protest by manufacturers of electro-mechanical components against the proposed in-house manufacture of some of the components required for the electronic exchanges by the ITI with foreign technical collaboration when the indigenous components industry had the capacity to produce them.

Mr. Gadgil replied that he had only received a representation from Bangalore which had expressed concern about the future of indigenous component supplies with the change over to the electronic exchanges. The Stowger exchanges would be abandoned gradually and the component manufacturers would have time to change their production line. He was not aware of the objection to the ITI's in-house manufacture of some components at Gonda. The proposals of ITI would not affect any ancillary unit.

He said that the Semi-conductor Corporation of India would manufacture large-scale integrated circuits for the electronic exchanges. Work had begun on the five lakh lines capacity electronics exchange manufacturing unit at Gonda. It would be ready in 18 months. Full capacity production was expected in 54 months. A unit of similar capacity proposed at Bangalore would be less costly because of the existing infrastructure, the Minister said.

CSO: 5500/7005

## OFFICIAL TELLS POSSIBLE USES OF INSAT-1B

New Delhi PATRIOT in English 23 Sep 83 p 5

[Excerpt] A nationwide conference network to enable people in different cities to hold simultaneous discussions is one of the possibilities being held out when the telecommunications utilisation of the INSAT-1B becomes fully operational, reports UNI.

Using voice channels, it will be possible for more than two persons sitting in different parts of the country to hold a discussion.

Mr M. L. Rawal, deputy director general (satellites) in the Communications Ministry, told UNI that this 'conference facility would not be very expensive' and will be within the reach of business houses and Government leaders interested in quick decision-making.

The charges would depend on the distance covered between two stations, Mr Rawal said. For example, if a person in Delhi was holding discussions with people in Kohima and Lucknow, the charge would be only for the longer distance (Delhi-Kohima) and the Delhi-Lucknow usage would entail a nominal charge. This would be because the voice channels would be on the same frequency, with no extra power used.

### Roof-Top Terminals

Mr Rawal said the equipment for installing such communication facility was available in India and business houses and even newspaper offices could have roof-top terminals.

It would require a dish antenna about three metres high and with a diameter of just over two metres. The entire facility would cost a maximum of Rs 2 to 3 lakhs.

One way to reduce the costs would be pooling such terminals by a group of organisations.

Such usage of INSAT-1B would also obviate the problems created by cable breakdowns and other terrestrial difficulties. Furthermore, it would make direct communications with remote areas and various islands easier.

At present, there are about 100 islands governed by the Centre. INSAT-1B will make it possible for the local administrators there to consult Delhi whenever necessary.

#### Telephone Circuits

In addition INSAT-1B will provide over 8,000 two-way long-distance telephone circuits potentially accessible from any part of India, even the remotest, without intervening terrain and terrestrial distances.

The utilisation of the INSAT system for telecommunications is based on the cost-effectiveness of satellite links between places separated by long distances over 2,100 to 2,300 km higher-order flexibility in routing of circuits.

Furthermore, the Posts and Telecommunications Department will soon dispense with the services of the INTELSAT satellite leased by following the failure of INSAT-1A in September last year to link up the main remote areas. All the 28 fixed stations of the P and T Department and two of the Oil and Natural Gas Commission (ONGC) will switch by mid-October from the two transponders of INTELSAT to INSAT-1B. In the first month 200 two-way telecommunication circuits have been planned and these will gradually be increased in the next three years.

CSO: 5500/7012

## TESTING, CONTRIBUTION OF NEW SATELLITE REPORTED

## Responds to All Tests

Bombay THE TIMES OF INDIA in English 20 Sep 83 p 1

[Text] BANGALORE, September 19.

WHILE the multipurpose Insat-1B satellite was 73.96 degrees east longitude at noon today, it reached its designated position of 74 (plus or minus 0.1) degrees east longitude at five in the evening.

Tomorrow morning, when the satellite is at about 74.04 degrees east longitude, a short manoeuvre will be executed by the master control facility to totally arrest its very slow and planned drift. Thereafter, it will be maintained at 74 (plus or minus 0.1) degrees east longitude.

The performance of all the sub-systems of the satellite, that have been brought into test operation so far, has been as expected. The mission controllers are very pleased with the performance of the attitude and orbit control system of the satellite, says an Indian Space Research Organisation (ISRO) press release.

The on-orbit test and check-out activities have covered (1) turn-on and quick-look tests for C-band telecom transponder channels (11 out of 12), both S-band high-power transponder channels, main and the redundant unit of the very high resolution radiometer data transmitter,

(2) extended duration "power-on" of S-band high-power transponder channels, (3) satellite antenna pattern tests for C-band telecom service and S-band broadcast service, (4) VHR transmitter tests, and (5) telemetry, tracking and command sub-system tests.

PRI adds: Despite the placing of the 1,193-kg. spacecraft in geostationary orbit nine days behind schedule, the satellite would become fully operational around October 15 as originally slated, the Indian Space Research Organisation (ISRO) announced today.

INSAT-1B, when fully operational, will enhance the country's television, meteorology and mass communication network.

The user agencies are the posts and telegraphs, the Indian meteorological department, All India Radio, Doordarshan and the education department.

All the ground segments of the user agencies are ready.

## 30 FIXED STATIONS

Thirty fixed stations, 28 of the P & T and two of the Oil and Natu-

ral Gas Commission, have been built for enhancing their communication capabilities through INSAT. They are currently operating with two transponders leased from Intelsat.

The satellite will be available for the uplink of all television centres including those to be set up under the crash programme of the government of India. A national programme of education through the satellite to college students has also been planned from November 1. Colleges and universities would be provided with TV sets in a phased manner.

Besides, the satellite's 12 transponders will provide 1,600 two-way long-distance telecommunication circuits and two high-power transponders for TV broadcasting and radio network.

## DATA TO BE RELAYED

The meteorological ground segment facility at the meteorological data utilisation centre (MDUC) at Delhi is also in readiness to make use of INSAT. The data transmitted by the satellite will be received in the form of electromagnetic signals at the Delhi earth station and transmitted to the MDUC over a microwave link.

## Contributions to Television

Madras THE HINDU in English 19 Sep 83 p 9

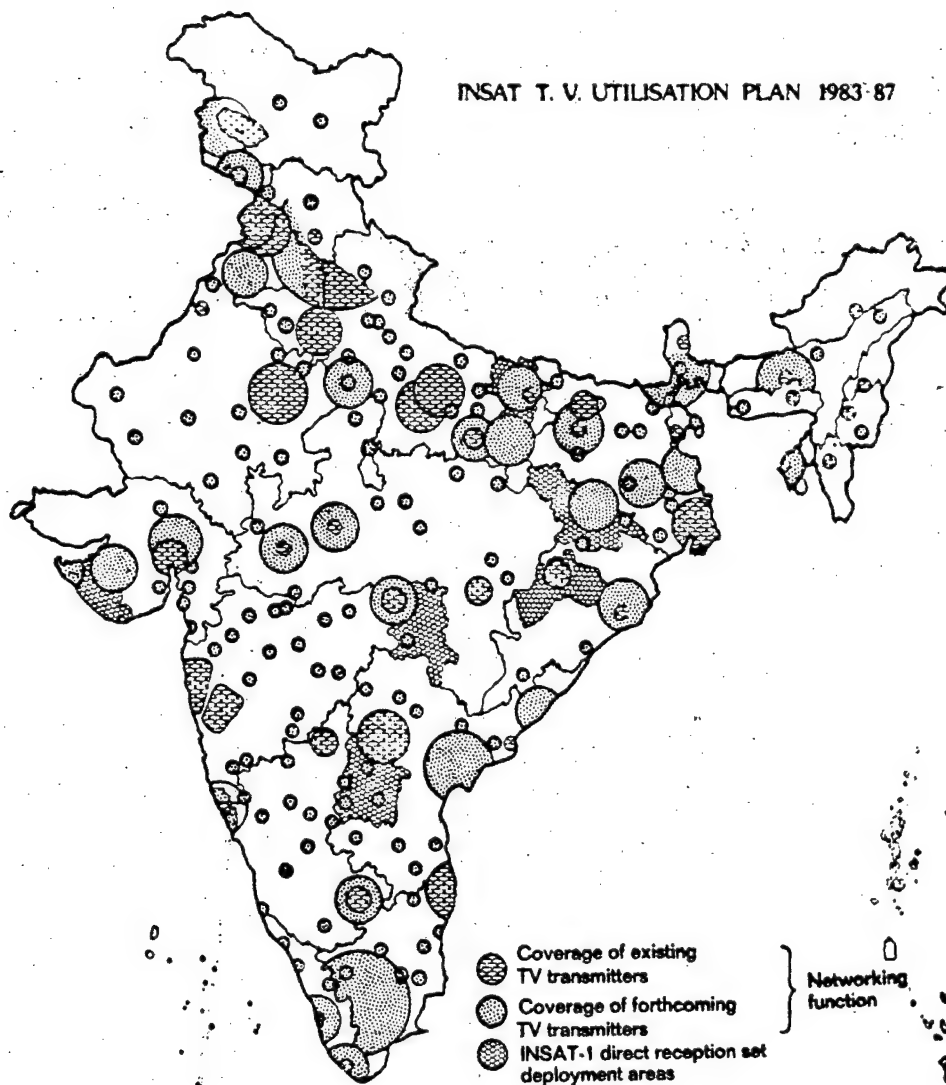
[Text]

NEW DELHI, Sept. 18.

The new multi-purpose satellite Insat-1B will give a fillip to expansion of the television network, already poised for a big leap under the crash programme seeking to bring 70 per cent of the population under its coverage by the end of next year.

Two transponders will be available for direct television broadcasting. One of them will substitute the Russian satellite now being used for transmission, and the other will be employed for the schemes that were discarded after the collapse of Insat-1A last year. The rental under the first satellite arrangement was

# INSAT T. V. UTILISATION PLAN 1983-87



around Rs. 1.80 crores, and the Russians gave the service at one-third cost.

One of the schemes that had to be given up last year envisaged television service to remote backward areas. Six States — Andhra Pradesh, Orissa, Maharashtra, Bihar, Gujarat and U.P. — were chosen for this and, in each case, three districts were to have been covered as a cluster for Insat service. By the time the first satellite became operational, makeshift ground arrangements were possible only in Andhra Pradesh and Orissa. The one-year time gap, since the failure of the first satellite, has provided a much-needed breather.

**Afternoon transmission:** The new satellite Insat-1B will be available for the link-up of all television centres including those to be set up under the crash programme. The Information and Broadcasting Ministry is also thinking in

terms of a one-hour national transmission in the afternoon for college and university students (the University Grants Commission is being involved in the project) and a special programme for women and children around 4 or 5 p.m.

In all, 26 high power and 113 low power transmitters are to be set up as part of the expansion to be completed by the end of next year. This will be a big jump, considering that the respective number at present is 21 and 20. The equipment for these transmitters will be supplied by three public sector undertakings.

The I and B Ministry is happy over the response of the State Governments to its request for facilities to set up new production or relay centres, according to its secretary, Mr. S. S. Gill.

**UGC participation:** About the educational programmes for college and university students, due to start on November 1, Prof. Rais

Ahmed, Vice-Chairman of the University Grants Commission said initially the transmission would be for half an hour every afternoon and by January '1, for one full hour. He expected all the 5,000 or so colleges in the country to be covered by the programme in a few years.

Prof. Ahmed said steps for development of software for the project had been initiated. Six centres had been set up for this purpose, one each at Jamia Millia (New Delhi), the Central Institute of English and Foreign Languages (Hyderabad), Pune University, Gujarat University (Ahmedabad), Osmania

University (Hyderabad) and Roorkee University.

The facilities at the Space Application Centre, Ahmedabad and the Film and Television Institute, Pune, would be utilised for training manpower.

Prof. Ahmed said the programme would be such as to enrich the student's knowledge and would not seek to give lessons on the course of study. To begin with, programmes prepared already in other countries and available would be utilised after screening and assessing their suitability to the Indian environment. The content of indigenous programmes would be increased gradually.

CSO: 5500/7010

## PRESS REPORTS PROBLEMS IN TELEPHONE INDUSTRY, SERVICE

## Problems of Indigenization

Madras THE HINDU in English 14 Sep 83 p 8

[Article by C. V. Gopalakrishnan]

[Text] **T**HE Department of Electronics (DOE) is unwavering in its faith that it would be possible to develop a fully indigenous electronic telephone exchange technology within three years. The State-owned Indian Telephone Industries Ltd. (ITI) seems to regard this as just moonshine.

The cold war between the ITI and the DOE on these matters which is more than three years old shows no signs of coming to an end. Prolonged discussions between visiting newsmen and heads of the Bangalore and Palghat factories of the ITI made it clear that its resentment over the DOE trying to lay down policy in matters relating to the electronic exchange technology for the Electronic Switching System (ESS) runs deep. An earlier session with senior officers of the DOE in Delhi revealed that the Department sees no reason to change its views on ESS notwithstanding the objections expressed against them.

**Two factories**

Facts relating to the Union Government's decision for setting up two factories for the manufacture of equipment for electronic telephone exchanges with an annual capacity of 5,00,000 lines each have already been reported in detail. The first factory will be set up in Gonda, Uttar Pradesh, and the second in Bangalore. The collaboration for both these projects will be with CIT-Alcatel of France.

Agreements covering a wide area have been signed between the ITI and CIT-Alcatel for production under licence in India, R & D collaboration for the development of the next generation systems and for supply of two lakh lines of finished equipment. Agreements have also been signed between the Government of India and Sofrecom, a subsidiary of the French telecommunication

administration for supply of equipment necessary for acceptance and testing reliability and for training and technical assistance. The two projects will together cost over Rs. 300 crores at current prices and 50 per cent of it will be in foreign exchange. It is quite certain that at the time of commissioning they would have cost a lot more, possibly twice the present estimate.

Matters relating to the Government's choice — preferring the technology offered by the French company to others coming from a number of international companies which had responded to the tenders floated by the Government — have already been discussed threadbare. The question is how the ITI is going to absorb this technology and whether it will be able to build a wholly indigenous technology for making electronic exchange equipment in the future, after an exposure to the French technology.

**DOE's optimism**

The optimism felt by the DOE about Indian telecommunication and electronic engineers being able to develop an indigenous technology is based on its own assessment of the contemporary electronic scene and of the hopes it holds out for India. The DOE has come to the conclusion that the large pool of scientific and engineering manpower available in the country, particularly in the field of computer work, makes it not only possible but essential for India to develop its own digital electronic switching system, utilising the state-of-the-art concepts.

The plan to set up a national centre for the development of an indigenous digital electronic switching system was the outcome of the DOE's assessment of the contemporary electronic situation. It has

drawn attention to unhappy earlier experience which should have taught the country that in a changing technology area foreign collaborations do not meet the objective of long-term self-reliance. The absorption of technology is also meagre where the systems are highly software-oriented.

#### Limited dependence

"The software packages received through foreign collaboration," says the DOE, "do not and cannot provide any information concerning the know-why and we will have to remain dependent on the collaborator to a large extent for software updating, debugging, etc., for a long period of time, if not permanently." What is the DOE's solution for this? It has visualised a plan of action, the essential component of which is to rely to the maximum extent possible on indigenous facilities already

available in respect of semi-conductor devices, microprocessor, memories, etc., and keep dependence on foreign collaboration to the minimum.

The DOE has carried out an appraisal of the hybrid E-10-B technology which will be transferred to the ITI for the two new factories. Its unpacking of the technology seems to have encouraged the DOE to believe that the evolution of large scale and very large scale integrated circuitry (LSI and VLSI) and the development work already done here makes matters much easier for India to evolve its own technology for the future.

A report prepared by the DOE on the E-10-B switching system says that a factory building equipment for a 5,00,000 line exchange will need 12 million integrated circuits, 0.3 million busbars, 2.8 million transistors, 1.4 million thermistors, 2.8 million conductors, 8.7 million capacitors, 1.2 million hybrid circuitry, 20 million resistors, 2.7 million diodes, 11 million couplers, 3 lakh light emitting diodes, etc. It has carried out a study of the facilities available in the country for making these components both in the public and the private sectors and how they could be augmented.

#### Difficulties

The DOE does not, however, think that it is going to be roses all the way for indigenisation efforts in respect of ESS. There will be difficulties when the ITI has to switch over from the hybrid E-10-B technology to the digital E-10-S, when the CIT-Alcatel finds itself in a position to make the technology transfer. The 16-bit microprocessors required for E-10-S embody the technology available with Intel of U.S. and the DOE is doubtful whether Semi-Conductors Ltd., in the public sector will now be able to obtain this technology from Intel since the IBM has acquired the majority shares in it.

The IBM may not approve of the transfer of technology to India and the SCL

is trying to obtain it from other companies like Motorola and Zilog. But these and other problems have not shaken the DOE's faith of being able to develop an indigenous ESS technology. It has drawn attention to the earlier though limited success in developing an entirely indigenous electronic exchange technology of stored programme control (SPC) achieved by the ITI and the small group of engineers of the Tata Institute of Fundamental Research.

The design is capable of meeting a channel capacity of 1,000 lines and is expandable to 5,000 lines. The lesson to be learnt here is that R & D efforts should concentrate right from the beginning on developing prototypes capable of induction into commercial production and not for laboratory trials only.

#### Assumption

The DOE's hopes of being able to press into India's service the skills of the non-resident Indian telecommunication experts principally in the U.S. are based on the assumption that these Indian engineers (working with U.S. companies) are very knowledgeable about the sources which could provide the required technology without making all the extortionate demands made on India when it goes to the overseas market directly and approaches a few multinationals. This assumption is, however, to be tested. The experience with Mr. Sam Pitroda in whom the DOE had placed much faith does not seem to have been encouraging.

The deterioration in the relations between the DOE and the ITI to a state of cold war looks both absurd and bewildering to the public at large since there is no disagreement between them on some major issues involved. For instance, the ITI also believes, as does the DOE, that there should be more than two electronic exchange factories if the demands of the expanding Indian telecommunications network are to be met.

The ITI certainly does not object to the intensification of efforts to achieve quick self-reliance in ESS technology since it knows more than anyone else of the heavy price the country has had to pay for continuing reliance on foreign technology. Why then does the ITI find it difficult to accept the reasoning of the DOE that full indigenisation of ESS technology is possible in three years?

The ITI does not believe that the DOE has enough knowledge or experience in matters relating to ESS (despite the fact that Mr. M. N. Mathur, Director of Telecommunications and a few other officers in DOE are experienced telecommunication experts). The ITI knows as much about the hardware and software content of the E-10-B and the E-10-S systems as the DOE and it does not believe that the indigenous capabilities for making these are at present adequate.

### Upgradation

A great deal of upgradation in the skills is needed and any talk of maximising utilisation of indigenous skills and capacities is, according to the ITI, like giving a Barmecide feast (in which nobody eats but only pretends to). The non-availability of indigenous capabilities will become more pronounced when the switch-over to the fully digital E-10-S becomes due.

In these circumstances, the ITI does not wish to delude itself and the country by talking about the nation's ability to have an indigenous technology within three years. It fears that hasty efforts to indigenise as fast as the DOE is trying to do will only expose both of them later to the charge of having mucked up the telecommunications network further with an ill-digested technology and by depending overmuch on an inadequate and far from well-prepared infrastructure. The ITI does not wish to have a repetition of the earlier crossbar experience.

The ITI has tried to reinforce its arguments about the DOE's lack of knowledge and maturity on matters electronic by drawing attention to the actual state of capabilities in the country relating to LSI and VLSI. These capabilities already built by the ITI will go a long way towards making India self-reliant in ESS but it is a little too early to claim that they will enable the country to develop capabilities for making eight or nine different kinds of chips or microprocessors going into the E-10-B and E-10-S systems. The LSI and VLSI facilities available for the ITI in Bangalore cannot yet be considered commercial and it has yet to go a long way to be able to support the requirements of the electronic exchanges.

It is at this stage that the intensity of the distrust between the ITI and the DOE becomes distressing. The ITI does not seem to have reconciled itself to the Government's decision to set up the factory in Chandigarh for production of semiconductor devices under the jurisdiction of the DOE, since its own pioneering achievements in LSI and VLSI which should have made it the claimant for implementing such a project had been ignored.

The ITI now seems to suspect that the DOE, having realised the magnitude of the tasks facing the SCL for building up its capabilities, is trying to "confiscate" its own LSI/VLSI units. It has remained very cold to suggestions from the DOE that the ITI should share the development of the SCL project, nor does it see any reason why it should buy the chips it needs from the SCL if they can be designed and developed by itself. It must, however, be pointed out that while the ITI may have its reasons for feeling so hurt and resentful, such a sense of exclusiveness which both the DOE and ITI seem to be developing can hardly serve or promote national interests.

The cold war syndrome in the DOE-ITI relations becomes more pronounced when we take a look at what is happening in respect of the new model telephone which the ITI will be manufacturing. The investment proposal for the manufacture of the new model telephone in collaboration with FACE Standard of Italy has been cleared by the Government and the capacity to be licensed for the ITI is 5,00,000 telephones.

### Decentralisation

The facts relating to the choice of FACE technology in preference to that offered by Siemens have already been extensively reported. What is of concern here is the attitude of the DOE which has never taken kindly to the monopoly enjoyed by the ITI for making telephones which in its opinion should be decentralised and farmed out to the State electronic corporations.

The DOE has already licensed a number of State corporations to manufacture two lakh telephones a year each. It has also decided that the country should commence production of electronic telephones instead of the electro-mechanical telephone which the ITI would still be producing in collaboration with FACE. The DOE has also received offers from a number of foreign parties in response to a global tender for the choice of technology for making electronic telephones.

Though the DOE may feel justified in deploring the attitude of the ITI in wanting to perpetuate its monopoly for making telephones — a charge which is vehemently denied by the ITI — it is hardly justified in acting in the manner it has done. There is no assurance that the Post and Telegraphs Department will accept the telephones which the State corporations will be making to the technology obtained for them by the DOE. Nor does it seem to have paid much attention to the state of existing capabilities of the State corporations for taking up the manufacture of telephones.

The confidence which the State corporations have in their ability for implementing such a project does not seem to be very encouraging. At a recent meeting between the ITI and heads of some of the State electronic corporations convened to explore the prospects for the transfer of technology by the ITI for making telephones, the ITI had offered to buy back one lakh telephones from each of them conforming to the technology it had transferred to them. The State corporations said they were not ready to take up the manufacture of the components suggested by the ITI and all they could do was to assemble the components which the ITI should supply. If this is the level of their technological competence, the DOE will have to think a lot more before it proceeds to entrust the State electronic corporations with tasks they may not yet be equipped to take on.

## Bid for Efficient Network

Bombay THE TIMES OF INDIA in English 15 Sep 83 p 14

[Article by S. Dharmarajan]

[Text] Bangalore.

The country's oldest major public undertaking here is preparing to try out the "last chance of a generation" to supply a system that will seek to ensure an efficient and reliable telecom network in the country.

The relevance of this effort to reinforce the information infrastructure is heightened by the context in which it is made. The existing telephone system is almost universally criticised even as communications traffic is expanding at an astonishing rate.

In fact, it is the heavy overload of traffic arising from the low telephone density (2.52 for a population of 100 in Ahmedabad, 3.94 in Bombay and 3.90 in Delhi) that has been the bane of Indian telephones. The country's desirable requirements are estimated at 30 million telephones whereas the number in use is 3.2 million.

As the producer and supplier of equipment and instruments for the telecom network, a requirement of this magnitude imposes upon Indian Telephone Industries the challenging task of building capability and a credible system that could handle far higher traffic levels with new technology.

Of course, ITI is only a manufacturer expected to turn over product line according to the specifications of the principal customer, namely, the P. and T. department. The crossbar system has been the heaviest cross it has had to carry. It took considerable time and R. and D. effort by the ITI to evolve an Indian crossbar system out of the imported and unproven exchange equipment inducted into the network in the sixties. Now, it is obviously reluctant to go in for any unproven system.

That explains the continuing acrimony between the communications high-ups, ITI included, and the department of electronics (DOE) on developing a fully digital system not in use anywhere. It is another story not within the purviews of a record of impressions of a visit to the manufacturing complex here. Suffice it to say the response here to the DOE's prescription is "don't force the pace of indigenisation. It is better to go in for capability proven elsewhere."

At the same time, one of the engineers summed up the sentiments of all those around: "This is our last chance to build a reliable system in our labs and shop floor."

### Preliminary Work

All these arguments stem from the decision to switch over to the electronic system from the existing electro-mechanical exchanges. Preliminary work has

been initiated on two electronic switching factories. More the rising requirements, and the technology to be used in them might now be beyond the horizon. [as published] In any event, the decision to go electronic has few detractors, but that does not minimise the ITI's problems.

A major constraint is finance. ITI units plan to produce Rs. 250 crores worth of equipment this year. All these are needed by the P and T some of it to commission the equipment the department has imported and integrate it with the network. But the P and T's resources to pay the ITI have been pegged at Rs. 125 crores. If the P and T's outstanding debt is taken into account, the ITI's entitlement will soar by another Rs. 225 crores. The ITI needs all this money to keep producing what it is capable of and what is needed by the P and T.

But the department's budgetary-allocation is far short of the ITI requirements. The total allotment this year to the P. and T. is Rs. 506 crores, of which Rs. 110 crores would be spent on imports and Rs. 80 crores on customs duty. The net effect is the risk of unemployment or layoff in the established sector.

Since it is difficult to go back on import commitments it would mean India would subsidise employment elsewhere while indigenous employment is at a risk. Further, stepping up indigenous production needs massive capital investment. On an average, it is computed that it costs Rs. 14,000 for creating a telephone line with all its infrastructure.

Not only is it impossible to provide investment on such a scale but there is also not enough money to put equipment to the ground. It is true that telecommunication investment has an in-built capacity to generate resources. but the surplus is used to offset postal losses in the P. and T., which does not help the ITI. This only serves to focus again on the need to delink the telecom sector from the postal wing.

The claim that postal services serve the poor and require to be subsidised is not unchallenged. It is pointed out that, with the illiteracy rate very high, communication will be easier if access to a telephone is greater.

#### Difficult Problem

Problems of a different sort arise from phasing out production of the strowger exchange equipment now declared obsolete. Named after its inventor, an undertaker, this ancient automatic switching system has been the most reliable of the electro-mechanical type. More than 60 per cent of the telephones in use in the world are still of the Strowger type. Even so, with electronic marvels sweeping the telecommunications world the huge Strowger equipment will have to make room for multi-operational, yet small and compact electronic exchanges.

For ITI the problems in phasing out the old would be: a number of machines which still have some useful life may become redundant, the skills developed over the years for making metal parts for the Strowger system cannot be

used to the original extent any longer, and since the manpower required for producing an equivalent number of electronic exchanges would be comparatively small and vastly different in skill there is likelihood of retrenchment of at least a part of the workforce. (The figure is expected to be of the order of 3,000 in the next two to three years).

Though it is theoretically possible to redeploy this surplus manpower in units manufacturing electronic exchanges, it will be a difficult problem because many of the men involved are past their middle age, when relearning is comparatively difficult.

ITI's managing director, Mr. Swaminathan, who, for a quarter of a century, has been engaged in the research effort in communications technology, tends to be nostalgic about Strowger. "While starting the process of putting this giant to sleep, it would be unfair if all those involved with the Indian telecommunication network do not at least whisper a word of thanks to the Strowger system" he says.

Though ITI has attempted designing successively new models its improvements have been limited because of inadequate infrastructure. The three major active components--dial, receiver and transmitter--continue to be the same as when the first telephone was made in this complex 35 years ago.

The Priyadarshini telephone, the jewel box, 671 and 677 types of instruments are models with basically cosmetic changes which continue to have weaknesses in the three basic active subsystems.

All said, the low density factor apart, there is a point in the ITI engineers' claim of a hostile environment for the instruments. The subscriber's fittings and the instrument contribute to 40 per cent of the faults.

If, as the critics assert, the ITI could not perfect even the telephone instrument, its strides in other areas of R. and D. could not be overlooked in spite of the limited capital investment of little more than Rs. 10 crores. Young engineers point with pride to a series of projects which entered the production line.

These cover a wide range, including computer microwave and satellite systems. Possibly, there is a greater need for coordination of telecommunication research and development at the national level. This is particularly so in the context of the ITI in the development of large-scale integrated circuits or very large-scale integrated circuits.

Based on the microchip, this is the key to the development of computer and communication systems, space technology, military and consumer electronics. It is obvious that the ITI should have greater involvement in the development of technology if it is to remain in the telecom business. The possibilities it could open up in the communications field are beyond the realm of fantasy.

Two pilot lines are being set up. One is a technology called "bipolar technology" for the development of linear circuits needed in telephones and transmission equipment, and the other is a technology (termed CMOS, or complementary metal oxide semiconductor technology) line principally for realisation of digital circuits. Lines for other further advanced technologies will be added as and when relevant.

Most modern transmissions switching equipment round the world are becoming digital, to make communications efficient at a lower cost and, therefore, the capability to develop custom digital circuits will be crucial for the survival of the ITI, a public enterprise required to plan and supply equipment for a modern and dependable communications network.

CSO: 5500/7007

## PLANS FOR DISTRICT LEVEL RADIO STATIONS TOLD

Bombay THE TIMES OF INDIA in English 15 Sep 83 p 5

[Text] BOMBAY, September 14.

OVER 150 district-level radio stations are expected to be set up in the next four years by the government of India and the International Telecommunication Union has already allocated the required radio frequencies.

The first radio station in the western zone is expected to be commissioned at Solapur next year with the installation of a one kilowatt transmitter, serving an area of 30 to 40 km.

The district-level stations have been planned essentially to attract and project local talents, according to Mr. M. N. Thirunarayanan, chief engineer (western zone), All India Radio. Mr. Thirunarayanan, who was engineer-in-charge of Bombay Doordarshan since 1974, took over his new assignment last week.

With increasing interference from foreign radio stations, the area of coverage of the existing stations were getting reduced and hence the need to augment the power of existing transmitters, Mr. Thirunarayanan told "The Times of India".

In the next four or five months, Pune will have a 100 KW transmitter against the 20 KW transmitter now in use. Raipur station, for example, was originally designed to cater to a radius of about 100 km., but its coverage has now dwindled to a range of 40 km. During this year, the 10 KW transmitter at Raipur will be replaced with a 100 KW transmitter.

India has adopted a three-tier strategy in developing the radio network. This envisages radio stations of three types—national, regional and district. Satellite communication may be used for broadcasting programmes from the regional stations.

For the national channel, a 1,000 KW transmitter has been planned for Nagpur and the site has already been selected, Mr. Thirunarayanan said. There are only two 1,000 KW transmitters in the country which are exclusively used for broadcasting programmes on the external services of the AIR. While the transmitter near Calcutta broadcasts programmes for South-East Asia, the one near Rajkot serves the listeners in the Middle East countries.

Under the projects already approved, Parbhani and Sangli which are now serving as auxiliary stations will soon have their own recording studios.

The three-tier strategy ensured that the precious radio frequencies could be rationally utilised for covering a wider audience, Mr. Thirunarayanan opined. Merely increasing the power of transmitters alone would not serve any purpose as, for example, a pro-

gramme in a regional language would not have large listeners in another region. In such a case, the transmitter should have the power to serve the concerned region alone, instead of wasting its frequency elsewhere.

**POWERFUL TRANSMITTERS**

Also, higher the power did not mean greater the area covered. Hence, many factors had to be taken into account in choosing the right type of transmitter for a given station, Mr. Thirunarayanan explained.

An added advantage of district-level stations would be that though a single frequency had been allotted for a station, the same frequency could be used for broadcasting programmes from various other district stations as they would not interfere with each other because of their limited range.

In the next plan period, 34 low-power transmitters (18 in Maharashtra, six in Gujarat, and 10 in Madhya Pradesh) and three high-power transmitters for television programmes have been approved. The high-power transmitters would beam TV programmes to a radius of 70 km. and they will be situated at Indore, Nagpur and Dwarka. The Nagpur transmitter will be commissioned next year.

Mr. Thirunarayanan also said that Bombay Doordarshan would hereafter telecast colour films directly with the colour telecine equipment which was installed before he left the TV centre.

CSO: 5500/7007

## BRIEFS

NEW RADIO STATIONS--Gorakhpur, Sept. 12--Six new local stations of All India Radio will come up during the current five-year plan, according to the Additional Director General of AIR, Mr. A. R. Shinde. The new stations, on which construction work has begun, will be at Nagercoil (Tamil Nadu), Adilabad (Andhra Pradesh), Tionuhar (Orissa), Kota (Rajasthan) and Cholhat and Bhipur in the north eastern regions. They will broadcast programmes for six hours a day. Mr. Shinde said setting up of more such stations would depend on the success of these stations. The concept of local radio stations had been developed with a view to playing a more constructive role in nation building and national integrity, Mr. Shinde said. He said AIR would be producing community songs in all the fifteen national languages, the music of which would be composed by famous musicians of the country. These songs would be sung by school children.--UNI. [Text] [Madras THE HINDU in English 13 Sep 83 p 7]

REMOTE LINE UNIT--Bombay, September 14--The first remote line unit in India attached to an electronic exchange will start functioning early next year, according to Bombay Telephones sources. The unit will be located at Cuffe Parade and connected to the 10,000-line electronic exchange at Worli. Out of the 10,000 lines, 2,000 will be attached to the remote line unit and cater to subscribers around Cuffe Parade. The code number will be '49'. Bombay Telephones have plans to instal similar remote line units in Cumballa Hill, Wadala and Goregaon. It has an unlimited range. The cost of an electronic exchange with the remote line unit is Rs. 6 crores. The unit at Cuffe Parade and the Worli electronic exchange have been imported from France. Bombay Telephones has decided to go in for the remote line unit as it has been described as a "space saving device", since it does not require huge exchanges. [Text] [Bombay THE TIMES OF INDIA in English 15 Sep 83 p 7]

USE OF INSAT-1B--Bhopal, Sept 13 (PTI)--With the successful deployment of the solar array of the INSAT-1B the Posts and Telegraphs Department would now go ahead with its plan for utilising the satellite for communications purposes, Deputy Minister for Communications Vijay Naval Patil said here today. He told reporters that the P and T had invested nearly Rs 38 crores as its share in the cost of the satellite. Mr Patil said more than 7000 transmission lines would now be available and the satellite would relieve pressure and congestion on the inland communications systems. It was proposed to have an additional earth station in the predominantly tribal

district of Bastar in Madhya Pradesh to supplement the 30 earth stations, he added. Mr Patil said a new 10,000 line electronic local exchange would be commissioned within a month at Worli in Bombay. It was proposed to replace the cross bar systems with electronic exchanges on phases and metropolitan as well as business centres would be covered under the scheme, he added. He said the Communications Ministry was also considering utilisation of the airline services for carrying postal articles as the volume of first class mail had been increasing and railway vans were not available in adequate numbers. The P and T Department is now paying about Rs 26 crores as rent to the airlines for transporting mail, he added. The Minister said the department planned to introduce its own mail van service at select places in Madhya Pradesh to reduce dependence on railways and State transport. [Text] [New Delhi PATRIOT in English 14 Sep 83 p 5]

CSO: 5500/7006

SATELLITE POTENTIAL FOR EDUCATION DISCUSSED

Karachi BUSINESS RECORDER in English 12 Oct 83 p 4

[Text] Ms Anna Casey-Stahmer, Vice-President of the Washington-based Academy for Educational Development, who arrived in Karachi on Monday met SUPARCO Chairman, Salim Mehmud, and discussed the possibility of utilising satellite communications in diffusing education in the rural areas of Pakistan.

The academy, which is a nongovernment institution working on a no-profit no-loss basis, was founded in 1962 and has been involved in devising educational and other community satellite programmes since 1969 in 75 countries.

Suggestions about the suitability of different types of educational, health care and other types of community programmes beamed through orbiting satellites, are made by the academy to governments in interested countries all over the globe.

The academy also helps in the training of key personnel.

Another area in which the academy provides assistance to interested countries is in the identification of the type of ground communication equipment best suited to its needs and the requirements of the programmes utilising satellite communication facilities.

Prior to her departure for Washington on Thursday, Oct. 13, she will hold a further series of discussions with SUPARCO officials regarding satellite communications and the organising of educational and health care and other social programmes.

This morning she spoke on the uses of satellites in education and development at a one-day seminar organised by SUPARCO.

The function held at the SUPARCO's Space and Atmospheric Research Centre (Sparcent), off University Road, was attended by a number of SUPARCO scientists.--APP

CSO: 5500/4703

SUPARCO TO STUDY LAUNCHING OF TELECOMMUNICATIONS SATELLITE

Karachi BUSINESS RECORDER in English 12 Oct 83 p 4

[Text] A feasibility study on the entire national telecommunications satellite programme, which involves the placing of a communications satellite in earth orbit within the next few years, will be initiated by SUPARCO at the end of October and be completed in six months.

Disclosing this during a speech at a one-day seminar on "the uses of satellites in education and development" in Karachi yesterday the SUPARCO Chairman Salim Mehmud said the feasibility study was being undertaken on the instructions of the Federal Government.

While a foreign consultants' firm would be involved in this exercise, the preparation of the feasibility study will be "primarily a SUPARCO effort", he said and added that a large number of the agency's scientists will be engaged in this task and will play a central role in its completion.

The terms of reference for the feasibility study had been finalised and clearly defined at a meeting of the "satellite users committee" in Islamabad last Sept. 28, which was attended by officials from the Telegraph and Telephone Department, Pakistan Television Corporation, Radio Pakistan, Education Ministry and Planning Commission (who will be primary utilisers of the proposed projects' satellite telecommunication facilities).

Listing the various questions to be dealt with in the feasibility study, Salim Mehmud said these included the establishment of the differing requirements of each user agency (as regards its telecommunication needs), the economic aspects of the national telecommunication satellite programme, how to best bring about a mix of varying types of services in one satellite, final detailed specifications for the communications satellite etc.--  
APP.

CSO: 5500/4703

BRIEFS

TV BOOSTER PLANNED--Dera Ghazi Khan, Oct 13: A TV booster will shortly be set up at Fort Munro, a hill station about 55 kilometres from here. This was disclosed by Acting Divisional Commissioner Syed Aftab Ahmed Shah while addressing the newly elected members of the District Council and DG Khan Municipal Committee. He said the proposal has already been agreed in principle by the Federal Government and he hoped that preliminary work on construction of the booster would start very soon. A site has already been selected for it. The commissioner disclosed that efforts for setting up a radio station at DG Khan were in progress so that the intelligentsia, poets and journalists could be given due representation. He said the Government was mobilising all available resources to bring DG Khan Division on a par with the developed areas. [Excerpt] [Karachi DAWN in English 14 Oct 83 p 8]

CSO: 5500/4703

PANA LAUNCHES LETTER WRITING CAMPAIGN

Addis Ababa THE ETHIOPIAN HERALD in English 25 Sep 83 pp 1, 4

[Text] The Pan African News Agency (PANA)--based in Dakar has mounted a letter writing campaign by African children to inculcate awareness about the special conditions of hardship under which the children and families in Angola and Namibia are living.

The campaign is part of PANA's contribution to the observance of Namibia Day which was marked on August 26. It calls on all the children of Africa to sympathise with the struggle of the children and people of Namibia and Angola for freedom and dignity against the oppressive measures of the minority white regime in Pretoria.

PANA's open letter to the children of Africa reads:

"On the 26th of August every year, Africa, our continent, celebrates the liberation day of a country located south of Angola called Namibia. This country is fighting desperately for independence. In this country, your brothers, sisters, fathers and mothers are fighting with limited resources against African forces, equipped with ultra-modern military weapons such as combat planes, armoured cars, tanks, bombs, surveillance satellites and so on.

These weapons, normally used to defend a country, are used here to attack and destroy villages, and to fight SWAPO (South West Africa People's Organization) and Angola. Under this pretext, South Africa has occupied part of Angola.

Children like you are dying every day or witness their parents murdered, humiliated and imprisoned. Instead of going to school, to the farm or nourishing their future dreams, their lives are transformed into a nightmare because they are fighting for their country, and above all, for those of your whose countries are not near Angola, since they believe the fall of Angola today under South Africa's occupation will lead to the fall tomorrow of another African country. [as published]

Since the children of Angola and Namibia are fighting (and also defending your freedom), you should also support and encourage them. Write them a

simple letter of encouragement to say you are heart and soul with them. Your letter will reach them, for PANA intends to select 10 children who will carry all the letters received to their brothers and sisters in Angola and Namibia.

We hope you would be among the first 1,000 African children, to write to their brothers and sisters in Angola and Namibia. Your letter must bear the following title."

A letter to my brother or sister in Angola and Namibia and should be sent to the following address:

PANA  
P.O. Box 4050,  
Dakar (Senegal).

Your letter must also contain the following information:

--Your name, date and place of birth,

--Your complete address. (ENA)

CSO: 5500/8

GHANA

BRIEFS

JAPANESE TELECOMMUNICATIONS EXPANSION GRANT--The Overseas Economic Co-operation Fund (OECF) of Japan has granted the government a loan of \$24.5m. for the rehabilitation and expansion of the country's telecommunication network. Under the project, the microwave radio link from Accra to Bolgatanga will be replaced with higher capacity equipment and television services extended to Tamale, Bolgatanga and certain rural areas. [Text] [London WEST AFRICA in English No 3451, 3 Oct 83 p 2320]

CSO: 3400/9

# ERRING TELEVISION STATIONS THREATENED WITH CLOSURE

Kaduna NEW NIGERIAN in English 9 Sep 83 pp 1, 25

[Article by Abdullahi Idris: "I Can Close Down Erring TV Stations"--  
Audu Ogbeh"]

[Text]

MINISTER of Communications, Mr. Audu Ogbeh has said that he has the power to close down any television or radio station whether it belongs to the federal or state government if it failed to comply with broadcasting regulations.

The minister said that any television or radio station that violated communications regulations would have their licences withdrawn indefinitely.

Mr. Ogbeh who made this known in a letter he wrote to the Governor of Ogun State, Chief Bisi Onabanjo and released in Abuja yesterday said that he was now making necessary arrangements to implement his earlier pronouncements on erring television or radio stations.

The minister said sections 4, 6, 9, and 10 of the Wireless Telegraphic Act of 1961 granted him sufficient powers to revoke such licences.

He said that although the governor cited section 31 (2C) of the Act, he deliberately misled the public, when he failed to quote the whole section which says "if in the opinion of the minister it is necessary for expedience for any of the purposes mentioned in sub-section 2 to cancel the allocation of a licence, he may by notice in writing cancel or amend a licence accordingly."

Mr. Ogbe further explained that one of the reasons why the licence of a state radio or TV station could be revoked was non-compliance with the International Telecommunications Convention of which Nigeria was a signatory and which forbids piracy and incitement via radio and television.

He also noted in his letter that Chief Onabanjo sought refuge in section 36 of our constitution which he said had become "the new notorious refuge camp for licentious conduct." Mr. Ogbeh said that while the same section sought to guarantee freedom of speech the same section also clearly stated that the freedom to express one's opinion should be within the law.

Mr. Ogbeh also referred to part 3 section 7 of the Wireless Telegraphic Regulations of 1969 which stated that a licence could be withdrawn if its users or user did not comply with the broadcasting regulations.

The Minister said the express authority to revoke licence was given under section 20 of the regulation which stated that, "when so requested by an authorised officer of the Ministry of Communication the owner of a station shall close down that station and shall not re-open it until permission is granted."

Mr. Ogbeh said Chief Onabanjo's condemnation of the use of broadcasting stations for incitement was a tremendous improvement on the position already taken by all others in his camp adding that this was a pleasant surprise. "You agree that there are laws to deal with offenders. Thank you for that."

The minister said one of such laws the Wireless Telegraphic Act of 1961 and Wireless Telegraphic Regulation 1969, which I am now about to apply because the laws recognise that sometimes the offender may be a state governor as is the case recently."

He observed that no society could survive which mistook anarchy for freedom, adding that he had no intention to allow chaos when there were laws to keep order. He said the governor should advise radio stations to comply or they would be shut indefinitely.

## SABC TV COVERAGE OF REFERENDUM ANALYZED

Johannesburg RAND DAILY MAIL in English 4 Oct 83 p 8

[Article by Greg Garden: "SABC TV's 'Yes' Coverage 70%"]

[Text]

DURING the past week, the SABC more than trebled the amount of time it devoted to coverage of the referendum campaign, compared with the previous week.

And, over the same period, it increased the amount of coverage it gave to proponents of a "yes" vote from just on 50% to nearly 70%.

This is thus already irrefutable evidence that the SABC has once again either been co-opted by the Government or has chosen to throw its weight behind the National Party.

Either way, such actions show the corporation's usual disregard for the provisions of its licence, which require it to act with impartiality, balance and objectivity.

The accompanying graph shows quite clearly that, during the week September 26 to October 2, the National Party received nearly four times as much coverage as any other party or group.

In addition, black, Indian and coloured views were all but ignored... that in a week when a News Focus programme posed the question whether blacks will have meaningful rights under the proposed new Constitution?

The SABC's attitude made the programme all but meaningless: SABC TV1 certainly doesn't give blacks the right to a hearing.

Two major considerations of the SABC's role in the campaign came to the fore this week.

The first arose out of the 33-minute-long edition of Nuus Fokus on Wednesday,

September 28.

This programme presented edited segments of the debate involving all five white political parties held at Pretoria University the night before.

In a sense, this was an historical moment in SABC broadcasting. My research has not revealed any example of such a debate ever having been transmitted to the South African public before.

But instead of being a cause for celebration, the programme further foregrounded the SABC's manipulative techniques and its refusal to render a concerned public service.

Numerous examples of the former instance were to be found in the programme. The most notable was probably the section where the representative of each party was allowed to pose one question to every other participant.

We were shown only one of each member's questions, and it is the SABC's choice of these questions which worries me.

Minister F W de Klerk was shown posing a leading question to the NRP's "yes man" leader Vause Raw about the PFP and CP opposing the proposed Constitution from contradictory standpoints.

The most irrelevant of the PFP's Dr van Zyl Slabbert's questions was shown... that directed at Jaap Marais of the HNP.

Similarly, the CP-PFP contrast was further highlighted by showing Ferdi Hartzenberg's question to Dr Slabbert.

The chosen question posed to the Nationalist Minister was from the only party which has not played a Parliamentary role in the debate... the HNP.

Editing techniques are the most powerful tools for the manipulation of viewers.

What is left out is often much more crucial than what is included... the statistics presented probably tell less than half the story.

The ordering and stress given to material is also important... every edition of News Focus/Nuus Fokus during the week both started and ended with the Nat viewpoint. This is a clear structural bias in favour of one attitude.

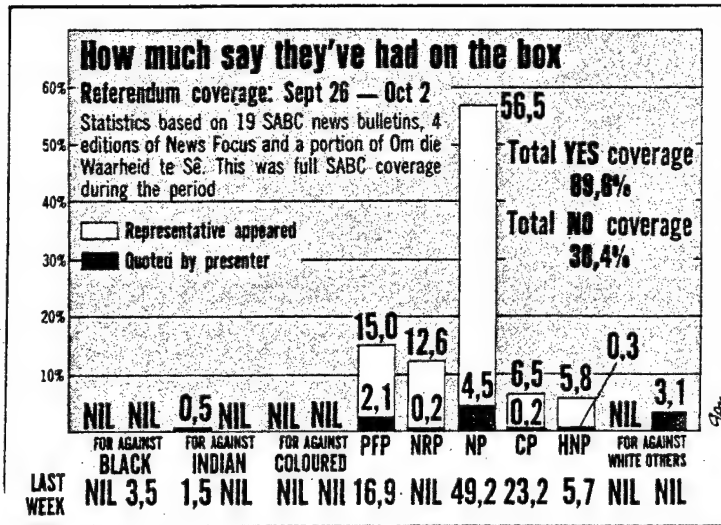
The second consideration arising from this programme is the SABC's refusal to organise a studio debate between the various parties.

The corporation's official attitude is that the parties themselves must arrange the details of such a debate and must *all* agree to participate.

As a live debate would not as easily be open to the use of the above manipulative techniques, it is not surprising that the National Party keeps refusing to consider such a debate.

If the SABC led the way, the Nats would not be in a position to refuse. In transmitting sections of the Pretoria debate, but refusing to initiate one itself, the SABC is again allowing the Nats to call the tune.

The News Focus programmes presenting the views of the five white parties have been a pretence of balance and objectivity.



The percentage ratio in the edition referred to above had a 37, 21, 17, 13, 12 proportion for the NP, NRP, PFP, HNP and CP respectively.

The Thursday edition in English gave the NP and the PFP almost equal air-time. In such cases, only the structural bias gives the game away; unobservant viewers are likely to be duped into believing the programme is impartial.

More worrying is the new format of the programme, in which viewers' questions are dealt with by an "expert".

Every single one of Professor S A S Stauss of Unisa's replies on Friday night were a justification of the proposed Constitution. The questions thus became mere platforms for Nationalist propaganda.

As we have no way of knowing what questions the SABC has received, it is impossible to debate what choices have been made regarding which questions to pose and which to neglect.

These programmes are thus likely to be the most damaging to the cause of fair play.

Less than a week after appearing in a Nuus Fokus programme advocating Christian support for the Bill, Professor Johan Heyns was again on the box...this time as guest of Willem de Klerk in his "Om Die Waarheid Te Se" programme.

De Klerk began the programme on a political note, and Prof Heyns came up with the old tactic of saying that the church must avoid party politics, but--surprise, surprise--he went on to say that the proposed Constitution should be supported.

In a country serious about democracy, the SABC would be called to book for a record like that tabled here.

## REPORTAGE ON ALLEGED SABC BIAS IN REFERENDUM COVERAGE

## Ethics Questioned

Johannesburg RAND DAILY MAIL in English 11 Oct 83 p 8

[Article by Greg Garden]

[Text]

**IN SPITE** of the past week showing a marginally improved balance between the "yes" and "no" opinion reflected on television by the SABC, I believe that this period has revealed a situation of bias and questionable ethical standards more serious than anything witnessed during the 7½ years the SABC has transmitted TV programmes.

The accompanying statistics are unacceptable enough, but they reflect only the surface of a strategy which must challenge all accepted notions of democracy and freedom of speech. The figures reflect the **CONTENT** of TV transmissions — the important first stage — but can tell us nothing of **HOW** this material was constructed, nor, indeed, anything about what was **NOT** included in that content.

Last Tuesday's News Focus programme purported to present "a cross section of English language newspapers". Any reasonable cross-section would include as its first choice South Africa's largest daily newspaper. But the Rand Daily Mail was excluded, according to an SABC spokesman, "because the programme was too short".

Quite simply, in SABC terms, that means that the views of the five chosen newspapers were considered more important than those of the most widely read paper. What the SABC understands by "public interest", which is a stipulation of its licence, I shudder to think. But what we are forced to accept is that what the above statistics do not include is a reflection of English reading South Africa's most widely exposed views.

The programme began with Sunday Times editor Tertius Myburgh supporting the proposed constitution because it is "the first step towards sharing political power at the centre". The programme ended, not with an impartial presenter, but with James McMillan of the Natal Mercury saying "yes" because "nothing will be achieved by stomping about outside saying 'no'".

Between these views, other snippets of Myburgh and McMillan were presented alongside the views of Ken Owen (Sunday Express), Tony Heard (Cape Times), and Harvey Tyson (The Star). Mr Tyson's contribution was that he didn't yet have a view for many reasons, including that "not enough has yet been heard from the Prime Minister". His 89 seconds are not included in the graph.

The final tally for this programme was 35,8% for those opposing, and 64,2% for those supporting the Bill.

But perhaps the SABC should be called upon to explain how it was that Mr McMillan's three sections were 76, 59 and 64 seconds long respectively, whereas those of Mr Owen (who opposes the Bill) were 41, nine and 16. What had been cut out of the nine and 16-second long segments to leave Mr Owen's unexplained and rather unsatisfactory "no"? I challenge someone at the SABC to reply to this question in nine seconds.

This type of despicable selective editing reached an all-time low on the 8pm Afrikaans news of Friday, when the PFP's Dr Marius Barnard was shown for 9½ seconds in English struggling to pronounce the names of the three proposed chambers. I find it pertinent and objective to ask three questions here: Why, out of an entire speech, was this embarrassing and unflattering segment chosen? Why, for an Afrikaans bulletin, was it in English? Why was Dr Barnard shown making the same point every other PFP speaker on the news that week had made?

I can find no other answer but that the SABC is indulg-

ing in the most insidious and underhand propaganda tactics. It is quite clear — even to me — that the PFP, like the CP, the HNP or the Catholic Bishops, opposes the proposed constitution for a number of reasons. And yet every single PFP speaker of the week was shown saying that his party says "no" because of "the exclusion of blacks". Selective editing by the special team appointed by the SABC to ensure that the Nat view predominates, has falsely represented this party's stand.

Five times between Tuesday and Friday, from five different speakers, the SABC repeated this PFP point. And then, lo and behold, on Saturday night, the Prime Minister was shown for a full 2½ minutes saying "they claim we ignore the blacks", but that "we are dealing with their situation".

If this cannot be seen as the most obvious evidence of SABC Government co-operation, then nothing ever can be. Needless to say, no black speaker has yet appeared on the box. No "coloured" viewpoint has ever been reported in the three weeks that this survey has been undertaken.

The statistics in these reports are compiled by taking timings, accurate to the nearest second, of every item of

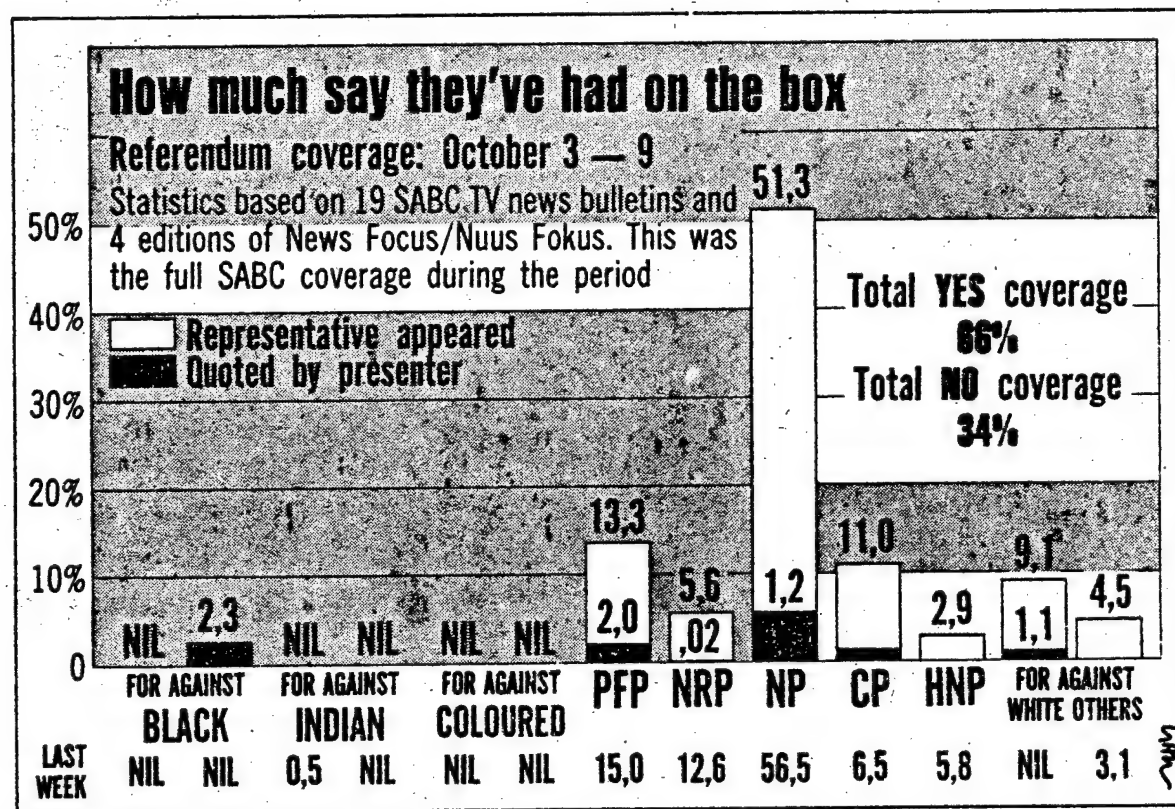
referendum coverage transmitted on television by the SABC during the weekly period Monday to Sunday. During the past week this

comprised 3 341 seconds of coverage which could be broken down into the categories labelled on the graph. An additional 709 seconds of

more general referendum news was not included in the statistics.

The results show a disparity between what the SABC is

required by law to live up to, and its present performance. Fairminded people can never believe that the end could really justify the meanness.



#### Radio, TV 'Propaganda'

Johannesburg RAND DAILY MAIL in English 12 Oct 83 p 10

[Article by Greg Garden]

[Text]

AT times like the present, it is very easy to bandy about the word propaganda.

I found myself using the word in relation to SABC TV for the first time ever in my "Eye on the Referendum" column yesterday.

And only last week the Rand Daily Mail Ombudsman documented a case of SABC radio propaganda, and discussed whether a television News Review programme could fall into the same category.

Clearly, to label any programme "propaganda" is to level a very serious allegation at the SABC.

Most people view propaganda with alarm. This is one reason why I have often preferred to use words such as bias, manipulation and distortion.

Allegations of propaganda are easy to make, and usually have an emotive ring to them. So just what is propaganda?

Perhaps it is such a difficult concept to define, be-

cause recognising it — or supposedly recognising it — is very much related to the viewpoint of the person observing it.

From this we thus get the throwback argument (which is no help at all) that it is very much a product of individual ideology.

What is fact to one man is just so much propaganda to another.

This argument merely obscures the issue further. Much more helpful are the five categories of propaganda dis-

tinguished by Michael Balfour in his excellent book "Propaganda in War, 1939-1945".

1. — False statements made in the belief that they are true.

2. — Deliberate lies.

3. — Suggestions of falsehood (Balfour's example is information leads and military activity designed to suggest to the Germans that the Allied forces would not be landing at Normandy).

4. — Suppression of truth (such as not releasing certain details, or playing down aspects of news).

5. — The slanting of news.

If we use these categories as a guideline, it becomes clear that there is more than sufficient justification to suggest that SABC TV, and mainly the news department, is becoming increasingly guilty of transmitting material which falls into categories No 4 and No 5 and sometimes even No 3.

The SABC's referendum coverage has been shown so far to be an obvious example of No 5, whether we look at the balance of the news bulletins or News Focus programmes as a whole, or at the selective editing practised on the speeches of Opposition speakers.

We are used to the SABC playing down certain aspects of news ... statistics relating to border casualties are, for example, often suppressed.

You might also recall that at a time when most of the news media were reporting the controversy surrounding the National Party's "Vote Yes" advertising campaign, SABC TV totally ignored the issue.

Similarly, TV 1 all but scorned the formation of the United Democratic Front, while on Monday night the Warmbaths bomb blasts were mentioned on only one of the three television news bulletins, where it was relegated to a minor slot lasting only 31 seconds with no visual coverage or support.

The SABC is not even above using diversionary tactics. The (coloured) Labour Party's announcement on Monday that it accepted the proposed new Constitution was reported in that form on the 8pm Afrikaans news, but on the early English news a 20 second report said that the party had issued a statement in which "all PFP Members of Parliament were called upon to resign" and "drop their paternalistic attitude towards the coloureds".

No mention was made of the Constitution.

Whatever your personal ideology, it clearly suggested a falsehood ... namely that coloureds had issued a statement against the PFP.

The Labour Party statement did mention the PFP, but was primarily concerned with the proposed Constitution and was issued in that

regard. SABC TV made propaganda out of it.

It is important that we ask questions about the social, historical and cultural conditions in which propaganda is produced:

- When and why does it occur?
- How is it consumed and by whom?
- Whose interests does it serve?

The SABC is required by law to serve the interests of the State, because the State's interests are regarded as the people's interests.

But the State is not the Government: at present the SABC is using propaganda to serve the interests of one political party.

Perhaps the SABC might be saved all this toil if the Government dropped its shameful pretence of freedom of speech.

In Berthold Brecht's bitter words: "Would it not then be easier for the government to dissolve the people and elect a new one?"

Political propaganda uses the main spheres of influence, such as the television service to achieve precise and well-defined goals.

But a more subtle type of propaganda employs "persuasion from within". This occurs when an individual has accepted the dominant political and economic ideologies of his/her society and bases what he/she regards as personal judgment and choices on that acceptance.

These choices are governed by what is at the individual's disposal. The earlier examples show that this is by no means always the full picture.

In a sense the SABC has turned itself into a propaganda organisation, and most of the good accepting citizens of South Africa are sitting ducks for its undemocratic tactics.

For months the SABC has been trying to paint a picture of instability and reverse racism in Zimbabwe. At the end of last week we heard news of a "Zimbabwe raid into Botswana," later reported as being "the forces of Joshua Nkomo".

The blatantly loaded and leading questions asked of Botswana residents on a Saturday night television news bulletin reminded me of George Orwell's wise words: "All propaganda is lies, even when one is telling the truth."

### Examples Given

Johannesburg RAND DAILY MAIL in English 13 Oct 83 p 10

[Article by David Dalling: "Why Do the 'Yes' Men Have It on SABC?"]

[Text] THE SABC is surpassing itself in promoting a pro-Nationalist "yes" vote on November 2, particularly through its television coverage of the campaign and of the issues involved.

FIRSTLY: The time allocated on all programmes, including the news-casts, is vastly disparate, favouring the "yes" arguments overwhelmingly.

This fact is confirmed by scientifically gathered statistical information, which has already been published.

SECONDLY: The clever use of camera angles ... close-up and far-away shots are being employed to the undue advantage of those who argue in favour of the Constitution and to the disadvantage of those opposing it.

THIRDLY: If a "yes" vote speaker addresses a small gathering, no audi-

ence shots are shown. But if a "yes" campaigner has a large audience then the camera dwells on that audience, giving the impression of mass support.

Conversely, if a "no" vote speaker addresses a small gathering, then the camera shows this, giving the impression of a lack of public interest.

If a "no" speaker addresses a large and supportive audience, this is usually not reflected in the programme. FOURTHLY: I have received serious complaints from PFP speakers, who have been recorded or televised at meetings or during interviews, that some of their most compelling arguments have been edited out of the programmes finally broadcast, and that less important points have been allowed to remain.

FIFTHLY: While Government and other "yes" speakers are portrayed

as having an entire armoury of good reasons why this new Constitution should be supported, the PFP is portrayed as virtually only having one argument to offer, namely that relating to the exclusion of black South Africans.

PFP speakers throughout the campaign have laid stress on several points, for example:

- The exclusion of black South Africans;
- The extension in the system and the entrenchment of further apartheid;
- The economic consequences;
- The dangers of one-party domination;
- The lack of acceptability of a constitution enacted without consensus; and so on.

Nearly all the points made are largely ignored by the SABC in favour of one central point, which, if flogged to death, can only bore white viewers inordinately.

**SIXTHLY:** While virtually anyone in a position of responsibility who announced a personal "yes" vote is almost assured of being interviewed on television — or, at least, of being quoted — the converse is not true.

No white businessman, no coloured, Indian or black leader has been given a chance to state on the television a negative opinion on the Constitution during newscasts.

All this adds up to an attempt to distort the factual reporting of the campaign in such a manner as to gravely prejudice those putting the case against the Constitution.

I have received an allegation from within the SABC that the teams of political editors dealing with the cov-

erage of the referendum are deliberately pursuing a policy of favouring the NP point of view, through the usage of clever editing techniques.

If this allegation is true, then it is a serious matter.

On September 14, 1983, a delegation of the PFP — consisting of myself, Mrs H Suzman, MP, and Mr H E J van Rensburg, MP — was received by the chairman of the Board, Professor W Mouton, the Director-General, Mr Steve de Villiers, and other members of the senior management of the SABC, including the Head of the News Department, Mr Jan van Zyl.

We were given the categorical assurance that the PFP would receive fair and objective treatment during the campaign and that the SABC would not favour one argument over the other.

This undertaking has not been honoured.

I have sought and obtained responsible legal advice, to the effect that the SABC, during this campaign, has on several occasions breached its charter and the conditions of licence under which it operates, and is probably in general breach of these conditions on a day to day basis.

The PFP is now taking steps to ascertain what legal rights are available to it at this time.

Finally — in order to avoid what could possibly be damaging legal litigation, in order to restore the name of the SABC and in order to ensure that the public are presented with the Constitution arguments in a fair manner — I call upon the chairman of the SABC, Prof Mouton, to institute an immediate and impartial investigation into the biased coverage of the referendum campaign, and to take urgent steps to stop the grossly unfair reporting of the Constitutional debate.

## Examples of Alleged SABC Bias

### NEWS FOCUS: Thursday, October 29.

(a) The time allocated to positive arguments was far in excess of the time allocated to negative arguments.

(b) In reply to an allegation by Mr Watterson that a Bill of Rights could only operate in a homogeneous society, I argued that it was precisely in a non-homogeneous society, one which was divided, that a Bill of Rights could operate to the advantage of citizens.

This argument was edited out of the programmes, leaving Mr Watterson's statement unchallenged.

### RADIO BROADCAST: Tuesday, October 4.

(a) Mr H E J van Rensburg (MP, PFP) debated for two-and-a-half hours with Mr L Wessels (MP, NAT). The SABC (radio) recorded the debate.

(b) Mr Van Rensburg dealt with a wide range of matters including:

- Population and urbanisation figures;
- Improved levels of mass education;
- Economic contribution by increased numbers of skilled workers;
- Increased black contributions to the national product, etc.

None of these arguments were mentioned by the SABC

when the programme was broadcast. Instead, excerpts of a less significant nature were broadcast.

### NEWS FOCUS: Tuesday, October 4th.

(a) "Yes" and "no" editors of national newspapers were invited to appear on the programme.

(b) Time allocated in the programme was as follows:

Mr Tertius Myburgh (yes) — 76 seconds.

Mr J MacMillan (yes) — 214 seconds.

Combined time: 290 seconds.

Mr Ken Owen (no) — 68 seconds.

Mr Tony Heard (no) — 87 seconds.

Combined time: 155 seconds.

This reflecting that almost double time being allowed to those arguing "yes".

### PUBLIC MEETING: Sandton. D J Dalling, MP:

(1) Television coverage of this meeting was promised by the SABC, who had been well forewarned.

(2) On the day of the meeting the SABC informed the PFP Sandton that a television camera was not available, but that a radio reporter would be sent.

(3) The meeting was held before an enthusiastic audience and was most successful.

(4) The SABC failed to arrive at the meeting and it was not reported at all.

### TELEVISION NEWS: Thursday, October 6.

(1) The SABC reported a small meeting addressed by Harry Pitman, MP, and broadcast several shots of the audience and empty chairs.

(2) The same evening, a nearby meeting of about 1 000 people addressed by Ray Swart and Chief Buthelezi was not televised.

(3) On the same night it selected for broadcast a large meeting addressed by F W de Klerk, MP, and again used audience shots to create the impression of mass public support.

### NEWS FOCUS: Friday, October 7.

(1) Excerpts of a speech made by Marius Barnard, MP, were broadcast.

(2) Although the meeting was well attended, the camera focused for several seconds on the only few empty chairs in the Hall.

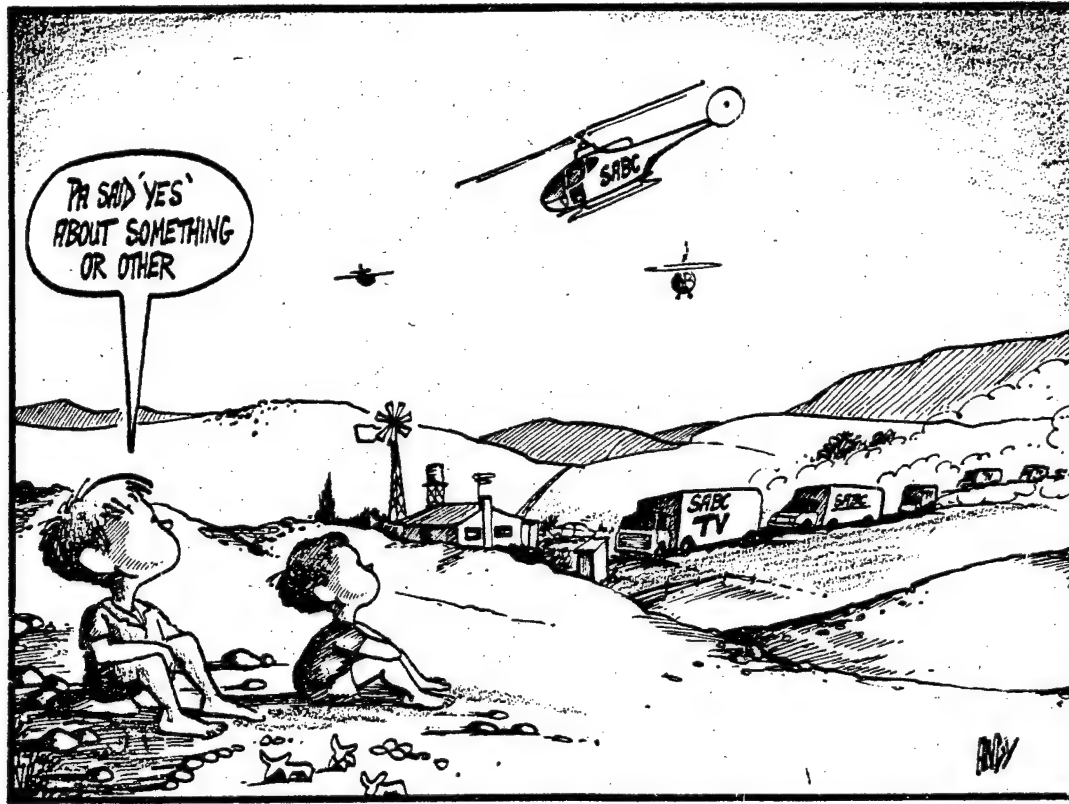
(3) Also, close-up shots were not used, and Dr Barnard was most disadvantageously photographed.

(4) Finally, when editing the film, the excerpts allowed to be broadcast covered a 45 second period when Dr Barnard accidentally stumbled over his words, thus giving a bad impression.

## 'Yes' Bias Ridiculed

Johannesburg RAND DAILY MAIL in English 14 Oct 83 p 10

[Text]



## SABC Chief's Denial

Johannesburg RAND DAILY MAIL in English 14 Oct 83 p 2

[Text]

**DURBAN.** — Mr Kudu Ecksteen, director general of the South African Broadcasting Corporation, yesterday rejected charges by the Opposition's chief media spokesman, Mr Dave Dalling, of bias in radio and television coverage of the referendum campaign.

Mr Dalling, in an article published in certain newspapers this week, said the SABC was "surpassing" itself in promoting a "yes" vote in the referendum.

He said unequal time was being given the "yes" faction

in all programmes, including newscasts, and he charged that "clever" camera angles were being used to show up "no" spokesmen in a poor light.

Scenes of empty chairs at "no" meetings were broadcast on television while this was not done during "yes" meetings.

Mr Dalling also said he had had complaints from members of the PFP that their most compelling arguments were being edited out of programmes recorded by the SABC.

He appealed to the SABC to abide by its charter and the conditions of its broadcasting licence and said if this were not done, the issue would be taken to court.

Mr Ecksteen said yesterday that as far as he was concerned, the SABC had been "meticulous" in reflecting the arguments of both sides in the referendum campaign.

"It is fully satisfied that it honours its obligations to the public according to its charter and its conditions of licence in reporting factual-

ly, soberly and impartially," said Mr Ecksteen.

The SABC had informed a PFP delegation that it would cover both the "yes" and the "no" viewpoints in referendum programmes and that it would do so thematically.

The corporation had invited the PFP to list the issues it would bring to the fore during the campaign and requested that the SABC be kept informed of PFP meetings to be held.

This has been done so far and the SABC was satisfied it had honoured its undertaking.

CSO: 5500/10

SIGNIFICANT SHORTFALL IN COMPUTER EXPERTISE SEEN

Johannesburg THE STAR in English 28 Sep 83 p 20M

[Article by Duncan Collings]

[Text]

A significant shortfall of expertise is occurring in data communications management and in general technical know-how, in the view of Mr Graham Bell, managing director of Grinaker Data Systems (GDS).

He said at a function in Johannesburg to mark the company's name change from Grin-el Data Systems (Pty) to Grin-aker Data Systems (Pty), that the growth of the data communications marketplace and the demands placed on the telecommunications infrastructure continued unabated.

Average annual growth was 40 percent, and some significant peak demands for services were well above this.

But there were indications "that expertise in data communications management is at best increasing at only 20 percent a year," he said.

"The result is an ever-increasing 'expertise gap' which is predicted to become critical during the decade."

It would only be marginally offset by advances in technology that would permit the use of lower-skilled technical resources.

He argued that the high growth rate was having a major

impact on the telecommunications authority's ability to provide the level of service demanded by users.

As a result there had been calls for policy changes to allow private enterprise greater participation.

"Change has already been seen in the PABX area, with suppliers assuming greater installation and maintenance responsibility for the South African Post Office. It is conjecture at the moment whether this change will spill over into current data communications policy. However, pressure for such change has never been greater or more sustained from both the user community and within the telecommunications industry."

If change did occur, commerce and industry would have to reassess their training programmes in an endeavour to close the expertise gap. Understanding this problem, GDS had developed plans to meet any changes in SAPO data communications policy.

GDS had recently reorganised its corporate structure to increase its level of service.

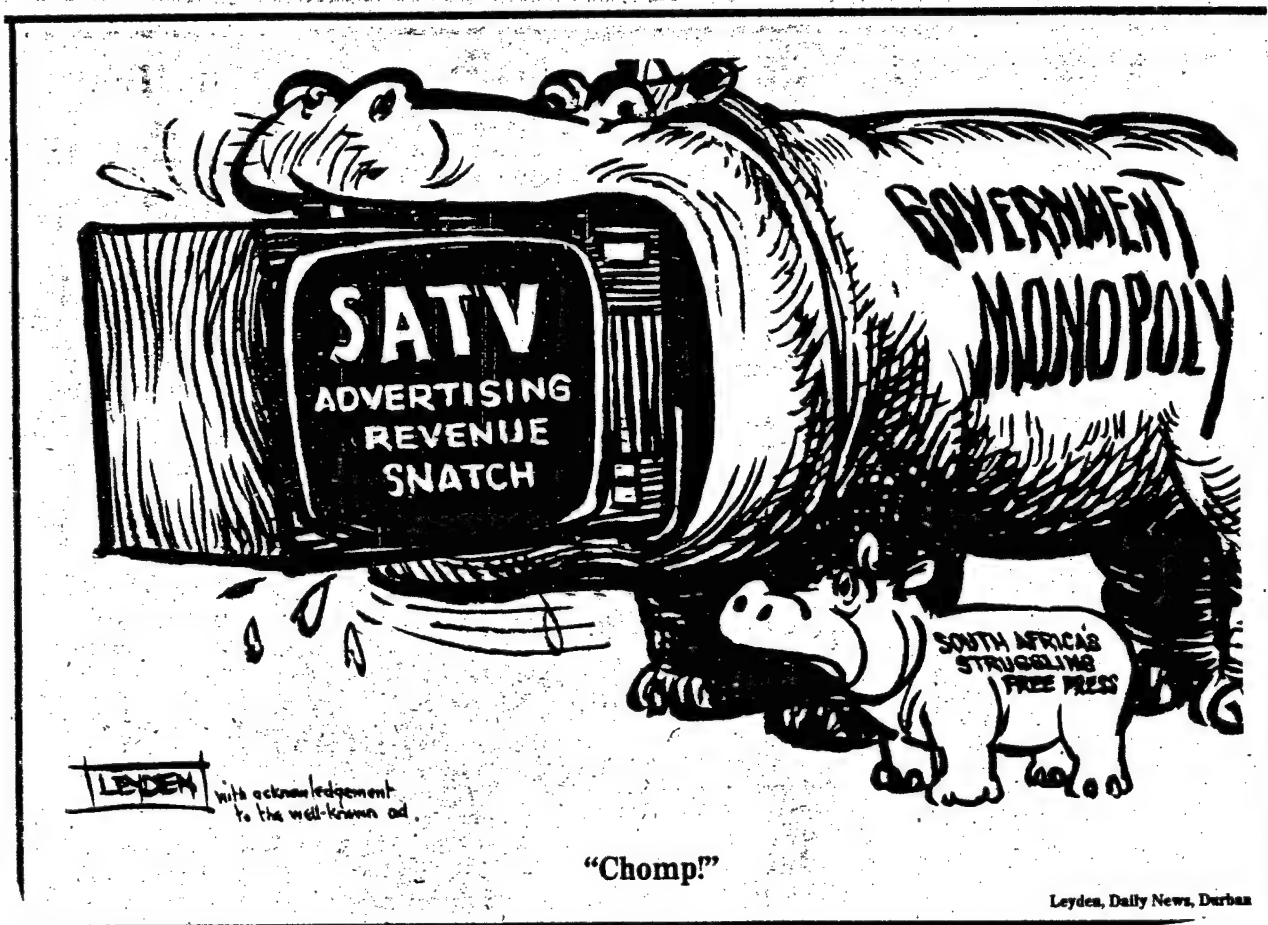
It now had four divisions offering specialised services to commerce and industry.

SOUTH AFRICA

GOVERNMENT MONOPOLY OF MEDIA CARICATURED

Johannesburg THE STAR in English 12 Oct 83 p 10

[Text]



CSO: 5500/10

SA COMPANIES INVEST IN WORLDWIDE FIBER OPTICS BOOM

Johannesburg RAND DAILY MAIL BUSINESS DAY in English 11 Oct 83 p 20

[Article by Mike Jansen]

[Text] **THE South African telecommunications and security industries are making major advances in fibre optics.**

African Telephone Cables (ATC) has invested R1,5m to become the first company to start making the cable in SA. Altech's subsidiary STC SA has announced plans for a R6m production plant to be operational by June. Pilkington SA has launched a division to market an extensive range of fibre optics-based security systems.

Altech, which has for some years battled without success to secure a niche in the tightly controlled SA cable industry, has now turned its attention to fibre optics.

A US consulting firm has predicted that the world fibre optics industry will grow at a rate of at least 48% a year to reach annual sales of \$1,49bn by 1987. Fibre optics systems are expected to overtake the conventional cable market for a number of reasons.

Much more information can be transmitted faster and more efficiently in a given size of cable. This is especially important in metropolitan areas where space is at a premium and data transmission requirements are growing rapidly.

Fibre optics cables cannot be cut or tapped without the knowledge of

the users. Neither are they susceptible to interference from motors, power generators nor electrical storms.

For high-risk industrial applications fibre optics cables are particularly useful as they cannot produce sparks to ignite gases.

The managing director of ATC, Mr Peter Watt, says there is tremendous scope for fibre optics, but the user will have to be educated before demand increases.

"Many companies are a bit reticent about becoming involved as the technology is changing so rapidly that things could be substantially different in three years time," he says.

Pilkington Brothers has become firmly involved with the establishment of its electro-optical group in the UK.

Pilkington Security Equipment is part of the part of the group which has been set up in South Africa.

Responding to the increasing demand for security — encouraged by the Key Points Act — the company has started to market a range of advanced perimeter security systems based on fibre optics.

"For all practical purposes the system is false-alarm free. It can be installed so that breakage of the optical path, which sets off the alarm, can occur only if a genuine entry is occurring," said Mr Kenny.

CSO: 5500/10

## BRIEFS

FAKE 'APPLE' SALES--Mr Wilhelm Helmbold, managing director of Pretoria-based dealer, Computer Unlimited, has come out in support of Apple Computer's efforts to prevent the worldwide market in copyright, trade mark and patent-infringing Apple copies from taking root in South Africa. He claims that of the number of Apple imitations already on the local market--mostly from Taiwan and Hong Kong--none is as good as the original. Nor are the imitations serviced or supported by Apple dealers when they break down. "The fake Apples seem to fall into two main categories. The first are close copies of the Apple, right down to a duplicated ROM code. Some even carry the multi-coloured Apple logo," says Mr Helmbold. "Others are visually similar, with supposedly similar or compatible data formats. They are generally marketed under unlikely brand names like Pineapple or Apollo..." All Apple copies have one thing in common: a very Apple II-like specification sheet. "They all boast the 6502 processor, have 48K of RAM, a colour display, eight expansion slots and so on. Some even list free pirated software programmes in the specification." He warns that, while the latest Apple IIe software is downgradable to run on the older Apple II, the reverse is not true of Apple II programmes--the kind pirated or sold to run on the Apple copies. "The net result is that buyers will soon find their illegal computer equipment outdated, with little chance of modernising it." Mr Helmbold believes Apple--and other manufacturers faced with the problem of unauthorised copiers--will be forced to release increasingly advanced products, like Apple's new Lisa, which contain a great deal of software in hardware, where it cannot be copied by unscrupulous operators. [Text] [Johannesburg THE STAR in English 12 Oct 83 p 21M]

CSO: 5500/10

## ZIMBABWE

### BRIEFS

**SATELLITE STATION AGREEMENT**--The Posts and Telecommunications Corporation and the Nippon Electric Company, of Japan, have signed an agreement for the installation of a standard earth satellite station at Mazoe. The project, which will be completed in April 1985, will be built at a cost of \$7 million, and Zimbabwean companies will be involved as subcontractors. A Ministry of Information spokesman says it will ensure that Zimbabwe celebrates its fifth independence anniversary free forever from dependence on South Africa for international communications. Provision of the earth satellite station will enable Zimbabwe to dial the outside world or vice versa, without using South Africa. [Excerpts] [MB212034 Harare Domestic Service in English 1745 GMT 21 Oct 83]

**DIRECT TELECOMMUNICATION LINKS**--Zimbabwe is to receive direct telecommunication links from 120 countries with effect from the first of next month. The announcement was made by the minister of information, posts and telecommunications, Comrade Nathan Shamuyarira, when he addressed the 35th annual meeting of the Harare Publicity Association in the capital yesterday. Outlining the current development projects of the Posts and Telecommunications Corporation--PTC--Comrade Shamuyarira said the corporation is involved in a 190 million dollar project of extending its services to urban and rural areas. The minister also said the project involved the reequipping of the entire PTC. Comrade Shamuyarira said new exchanges and lines are being established throughout the communal areas, and that work is underway to link Zimbabwe with member countries of the Southern African Development Coordination Conference. [Excerpt] [MB201630 Harare Domestic Service in English 0400 GMT 20 Oct 83]

CSO: 5500/14

U.S. BLOCKING UNESCO ON NEW INFORMATION ORDER

LD071124 Moscow TASS in English 0954 GMT 7 Oct 83

[Text] Washington October 7 TASS -- The White House made new malicious attacks on the United Nations, its bodies and specialised agencies. And again it was President Reagan who acted out the part of a "critic", accusing UNESCO (The United Nations Educational, Scientific and Cultural Organisation) Thursday of pursuing a policy which he called alien to the concept of the free exchange of ideas and information, and of promoting censorship.

UNESCO is currently working on a code of rules which would regulate the situation in the international information market. It is important that such a document be worked out, since many developing countries of Africa, Asia, and Latin America have virtually fallen a prey to "information imperialism". Major Western information monopolies, using the concept of free exchange of information as a cover, are working to establish control over the process of news distribution in the developing countries, trying to impose on the population of those countries such views on international developments which suit the West, and are openly preaching the cult of force and militarism.

The developing countries, therefore, actively demand that a new information order be established. The United States, however, is blocking the realisation of that demand. According to the U.S. President, Washington is striving to ensure the observance of the principles of open communications. To ensure freedom in information is to defend democracy, according to President Reagan's statement circulated here.

CSO: 5500/1007

'ANTI-CUBAN' RADIO STATION TO 'POLLUTE AIRWAVES'

LD131428 Moscow TASS International Service in Russian 0903 GMT 13 Oct 83

[Text] Washington, 13 Oct (TASS) -- TASS correspondent N. Pakhomov reports:

The anti-Cuban subversive radio station which is being set up by the United States will be a weapon for crude interference by U.S. imperialism in the domestic affairs of a socialist state. This was confirmed again by a statement circulated here by President R. Reagan in which the White House chief showers praise on the draft bill approved by Congress and recently signed by himself establishing this slandering mouthpiece.

The President gives an extremely clear definition of the aims of the radio station. With its help the United States could "put an end to the monopoly" of the Cuban Government in the distribution of information on the territory of that country and have an influence on the Cuban Government's foreign and domestic policy. Speaking with obvious irritation about "communist domination" on the island of freedom, Reagan in effect impudently grants himself the "right" to dictate the form of authority which should exist in a sovereign state. Just as self-importantly he promises to bring the "truth" to the Cuban people.

The "right" of which the U.S. President speaks can be judged if only by his admission that the new mouthpiece in the psychological war by the United States against the world of socialism will be "akin" to such polluters of the airwaves as the "Liberty" and "Free Europe" radio stations which daily pour torrents of filth on the USSR and the European socialist countries. It must be added that these slandering radio stations are controlled by the CIA and are virtually organs of the U.S. espionage and sabotage department.

In commenting on the Reagan statement political observers stress that it indicates the intention of the U.S. Administration to step up its dirty subversive activity against Cuba. This is also shown by the generosity with which funds are being supplied to set up the anti-Cuban radio station: In this and the coming financial years alone \$25 million will be set aside for these purposes and there are plans to increase these funds in the future.

CSO: 5500/1007

'INTERVISION' TELEVISION FORUM OPENS IN MOSCOW

LD291513 Moscow TASS in English 0945 GMT 29 Sep 83

[Text] Moscow September 29 TASS -- The traditional "Intervision" Forum, which is held here every autumn, has opened in Moscow today. An evidence of the international prestige of the forum is the fact that attending it are representatives of 50 TV organizations and companies from 30 countries of Europe, Asia, and America, among them Britain, Norway, Italy, India, France, Sweden, the USA, Japan and others. Colombia for the first time takes part in the TV forum this year.

Secretary of State G. Shultz and U.S. Vice President G. Bush, who was visiting Vienna, spoke in a similar vein recently when in essence they revised the principles of the Final Act of the all-European conference in Helsinki, which was also signed by the U.S. president. We get the impression, the commentary points out, that we are witnessing the appearance of a new U.S. doctrine with regard to Europe whose implementation could threaten stability on the European continent, where peace finally reigns after two world wars. The state borders formalized in Europe after World War II, which were also enshrined in the Helsinki Final Act, cannot be revised.

The Warsaw Pact States, including Hungary, have recently addressed to NATO numerous proposals on holding talks on the basis of the respect of the political realities in Europe in accordance with the existing agreements.

THE SPECULATION AIMED AT SETTING THE SOCIALIST COUNTRIES AGAINST ONE ANOTHER IS DOOMED TO FAILURE, THE NEWSPAPER NOTES, AND THOSE PEOPLE WHO BELIEVE THAT BY FALSIFYING THE OBJECTIVE DIFFERENCES THAT EXIST BETWEEN THE SOCIALIST COUNTRIES THEY CAN UNDERMINE THE UNITY OF THE SOCIALIST COMMUNITY COUNTRIES AND EVERYTHING THAT UNITES US, THE BUILDERS OF THE NEW SOCIETY, ARE WRONG. [passage in uppercase printed in boldface]

CSO: 5500/1006

FIBER OPTICS, COAXIAL CABLE, DBS SATELLITE TV COMPARED

Paris REVOLUTION in French 9-15 Sep 83 pp 52-54

[Interview with Philippe Chauvet, director of the interministerial commission responsible for aiding development of France's cable connection (Schreiner mission); Alain Giraud, technical adviser to Minister of Postal and Telecommunications Administration Mexandeau; Jacques Salles, technical adviser to Georges Fillioud, secretary of state for communication techniques; and Michel Treheux, deputy director of the CNET (National Center of Telecommunications Studies) in Lannion; by Jacques Bidou and Alain Germain; date and place not given]

[Text] The television of the future, providing a wide range of programs, unfurling its images and sound day and night, is already upon us. How will such broadcasts be relayed, by cable or satellite? That is the question we put to four experts, a question that very quickly became: What actually are we going to relay?

[Question] The orbiting of television and telecommunications satellites and France's cable connection by the year 2000: These are important decisions made at different times by different governments. Is there not a contradiction between the two decisions?

[Giraud] One has to go back to the 1970's when, on the international level, the question was posed of the planning of direct broadcast satellites, which then seemed to be the obvious way of the future.

A conference of the International Communications Union (Geneva, 1977) defined for the Europe-Africa zone -- in a somewhat theoretical manner -- what would happen in the next 20 to 25 years and set somewhat maximalist rules for direct broadcast TV, without being based on any specific plans. I do not think I am mistaken in saying that the plan has since become a kind of Bible, as if these decisions, which were only guidelines, a framework of sorts, guarantees within which each country could work, became a plan to be carried out.

Only last week, I read, concerning the launching of the Indian satellite by the American Space Shuttle: "Thanks to this satellite, tens of thousands of Indians will now have television." That is not true! A satellite is only a

tower 36,000 kilometers high with a transmitter costing about a billion francs. But in order to receive the broadcasts, one has to have equipment (parabolic antennas) costing tens of billions of francs. Furthermore, it takes considerable time to equip a country.

[Salles] Absurd prices were announced for such reception equipment: 700 to 800 francs. That is not true! The saucer itself will cost from 1,700 to 1,800 francs. Then one has to add sound transcribing equipment costing over 1,000 francs, plus installation. That is very expensive equipment for a household.

[Question] Should one not link this craze for the satellite and the decisions made under Giscard with a conception of communication (embargo on teledistribution) exclusively oriented toward national, even international, television, totalling forgetting the regional and local dimension?

[Salles] In a report which the government requested at the time from Cannac (then boss of Havas), the objectives were exclusively of an industrial and commercial nature. There was practically not a word about the use of the satellite, not a word on programs....

[Treheux] Industrial considerations (relating to the space industries in particular) and the problem of international markets generally got ahead of reflection on television itself.

[Giraud] The idea at that time was: Since the earth microwave system is practically saturated, the satellite will make it possible to have other networks.

[Question] But why give up the cable? Can one say that technically speaking, the coaxial cable at the time did not respond to that concern?

[Salles] At the time, they knew that the conventional coaxial cable had a great capacity for television broadcasting (in the United States and Belgium, for example). That is not where the problem lay. Rather, it was on the political level because they realized that it was an area in which political control was much less easy to exercise than on a mass medium such as a television network.

[Chauvet] I think that at the outset, technical considerations (telecommunications) relating to the mastery of space, with the military dimension of the problem, carried a great deal of weight and the matter of programming was put off.

[Salles] I absolutely agree with Giraud when he says that the satellite is a tower. For me, they are two different things: The cable system is a political act that commits an entire country, its future, while the satellite is but a means of sending one, two or three programs (given the current state of the art). Cable changes something in the life of the people; the satellite does not.

[Question] What is now happening with the decisions on satellites?

[Answer] Starting in 1978, a somewhat Manichean conception made its appearance. On the one hand, it presented the direct broadcast satellite, an extreme solution, making it possible to have widespread individual reception, and on the other, the telecommunications satellite, which requires big community antennas and therefore, cable systems. The decisions made by the French Government in 1979 confirmed this dichotomy between direct broadcast satellite TV and the telecommunications satellite.

[Salles] It was a decision cast in bronze with the French-German agreement.

[Giraud] Actually, there is absolute continuity between the different solutions. Receiver antennas may be 90 cm, 1 meter, 1.20 meters, 2.40 meters, even 32 meters and the power of the satellite can vary however one wants. All this must be determined based on needs.

This dichotomy was fed by institutional, not to say corporatist, conflicts. One cannot conceal the role of certain technical and administrative lobbies, whether we are talking about space or audiovisual technology.

[Salles] All one finds at the time in the way of proposals on programs on TDF 1 [French Direct Television] is the broadcasting of national networks, the argument being coverage of zones of darkness.

[Giraud] If the satellite had been launched in 1970-1980, it would almost have been justified by the coverage of zones of darkness. But the further we move ahead, the less true that is.

In addition, TDF 1 is a preoperational, experimental satellite, but at present, the French-German agreement involves only TDF 1.

[Salles] That satellite is now being built and it will be launched in 1986, as planned. In the 1984 budget, allowance is made for it.

[Giraud] In order to go farther, we should complement this TDF 1 program with a TDF 2 and TDF 3 program -- that is, an operational program. These decisions have not been made.

The leftist government has not halted the TDF 1 program, but for the time being, it has not decided to go ahead either. The question is whether one completes an operational satellite identical to the preoperational one in order to be able to market it, or whether there are solutions better suited to the international market and our needs, a kind of intermediate solution between the direct television broadcast satellite and the lighter, more flexible telecommunications satellites, a satellite a little less specialized than TDF 1.

[Salles] With all those reservations, no decision has been made.

[Giraud] The whole question is who pays; that is what has changed. At the time, the government had a monopoly. The satellite was for its use. It was

therefore led to pay for TDF 1 entirely, with its future partners. But since the law of July 1982, the government can grant national networks to private interests (for example, Channel 4). Consequently, the satellite is now on a market in which "the customer" must be satisfied.

[Question] At this point in the discussion, how is one to deal with the decision to set France up for cable?

[Giraud] It supports the need for a direct television broadcasting satellite (not necessarily of the TDF 1 type) because we are sure that at least the people hooked up to cable will be able to receive it, without individual equipment.

Furthermore, not everyone will be hooked up to cable immediately.

[Treheux] In order to have a better understanding, one has to go back to the law of 1982. It is the change in programming philosophy that is important, whatever techniques are chosen.

[Chauvet] The philosophy of the law is the broadcasting space and no longer just the limits, with multiple national, international, local and regional sources. The technology is there to provide solutions.

[Treheux] Then, thanks to cable, one will gradually move from national programming to total interactivity, a period that will extend as far as the year 2000.

[Chauvet] While awaiting that highly individualized programming, there is a whole intermediate period of local and regional programming by sites.

[Salles] With a whole series of effects difficult to perceive and that must be looked at very closely.

[Treheux] With a total revolution in methods of production and programming.

[Chauvet] Here, one must separate technical dimension from the program and content dimension.

On the technical level, possibilities are very great. It is very easy to make networks of national and international programs available -- foreign networks, for example -- and the Postal and Telecommunications Administration will not fail to propose this type of programming to its customers.

[Chauvet] That is the technical side, but in order to arrive at regional and local programming, there must be an interurban entity.

[Question] With the laws of the market, one risks seeing national and international programs actually invade all networks.

[Giraud] That seems inevitable.

[Question] But according to Philippe Chauvet, that does not seem to be the spirit of the law.

[Chauvet] Programming is definitely the backbone, not production. It must be regulated based on local and regional production and on national proposals. How can we avoid the American situation, in which local networks program only national and international material? First of all, through a local control of programming. Second, by encouraging local and regional actors to invest in the media.

[Treheux] This is a movement that one cannot create easily and rapidly and consequently, the easy solution is to broadcast foreign programming.

[Chauvet] For Biarritz, for example, it is urgent that a regional enterprise set up a distributor that will very rapidly propose programs to a number of regional cable networks. There must also be regional production and communications enterprises.

[Question] Such a plan remains vulnerable if no policy of regional and local programming is developed. That vulnerability is heightened by satellite-type technologies, which normally propose national and foreign programs.

[Chauvet] It is a matter of regulation. Satellites can propose programs in the form of traditional channels, but also in the form of services -- that is, a type of block that would be made available to programmers of cable networks. One can imagine channels of national interest, of the encyclopedia type, and so on. The Mexandeau plan presents a multiservice aspect, but there are inevitably limitations. First of all, one must examine methods of regulation and here, the law of 1982 contains a certain number of "handles" permitting that regulation.

There is a confrontation over the supply of programs, for example, between the regional and local production capacity, international supply and public demand.

[Question] Then there is the economic aspect: This represents an additional burden for the household, with all it may represent in the way of the reinforcement of inequalities. There is the inversely proportional nature of production costs. International products reach vast territories and therefore come to us at very low prices. That is no longer true for national products and regional and local productions will be very difficult to finance. This accentuates our vulnerability.

[Giraud] Whatever techniques are chosen, the competition will take place. If there is no satellite, broadcasting will take a different channel: cassettes, traditional microwave systems, and so on. It is a matter of regulating properly. We must not lose our heads. I see the future situation of television as something that will in the end be somewhat comparable to the current situation of radio. Public service is in competition -- this is nothing new -- with peripheral commercial stations. There are regional and departmental radio stations. There are private stations that receive more and more

international programs. If you listen to the records played on private radio stations, you would think it is an international music market! Then there are all kinds of interesting variety shows.

[Treheux] Twenty years ago, a radio transmitter was very expensive. One can now broadcast with relatively inexpensive equipment. With respect to television production, companies using cable (or possibly a satellite channel, for example) will have to pay part of their receipts into a fund that will go back to production.

[Question] That is very positive, but it does not overestimate the organization of production itself. It may accentuate the phenomena of concentration and not encourage the emergence of new actors on the regional, local or even national level.

[Chauvet] The tool is ready. We now need a system of regulation. Moreover, it is a little for that reason that the final draft of the orders concerning application of Articles 77 and 78 of the law will be released, by 1 January 1986 at the latest. By creating the tools immediately, one can experiment, test, move into operation and reflect in order to find a better balance. The next orders during the coming year will mainly be procedural, making the law applicable, but without upsetting the balance of media development.

[Giraud] Another regulative mechanism aimed at avoiding such concentration and ratified by the law of July 1982, in total opposition to the preceding situation, consists of avoiding the integration of production-programming-distribution. This vertical integration is the main factor of concentration.

[Question] Does the reading public not have a decisive role to play?

[Giraud] Among public service personnel, a large proportion were nostalgic for the big unified public service of the ORTF [Office of French Broadcasting and Television], which was something fantastic. It is true that the law of July 1982 puts an end to this concept once and for all; that was a completely conscious decision. That type is totally obsolete. It was a great thing, but it is no longer adapted. But with that being the case, it is definitely in the public service at present that one finds nearly all television professionals.

A thematic sector such as the news is sufficiently developed to use a satellite that would broadcast news 24 hours a day or "wholesalers" that would supply cable networks. That exists in the United States with the Cable News Network. From an economic point of view, it is very interesting. When Cable News Network sends a crew to do a story somewhere, the crew is exactly like an A2 team, except that they will bring back several hours of programming, when the network team will get 45 seconds in the newspaper.

Our networks are in the best position to propose something of that type in France rather than to wait for Ted Turner to start a French subsidiary.

[Question] That poses the problem of pluralism.

[Giraud] If we do not do that, what will we do when, for example, Ted Turner, who is the owner of Cable News Network, sets up a European subsidiary? Will we take regulatory measures to prevent him from doing it?

[Salles] With 17,000 employees for an annual production of 11,000 hours of programming, French television is far from being one of those getting fat off people who do nothing! The BBC has 40,000 employees.

[Question] Do you not have the impression that with the system now being set up, inequalities of access to new audiovisual services will accentuate social and cultural inequalities? That is the problem of Channel 4 pay TV, subscriptions to cable, and so on.

[Chauvet] Without first defining types of cable remuneration, one can in my opinion discern three kinds of services supplied: first of all, a public service section, guaranteeing paid service, even if the local company offering cable should go bankrupt. That is the reason for the presence of the TDF in those local companies. Public service television would be guaranteed for every French citizen.

Next, insofar as the presence of representatives of local and economic communities is assured in the programming company, another section could be accessible to the great majority, to all those joining cable, through a minimal subscription.

Then there would be the portion left up to the customer's capability. It is the margin of diversification that the law approaches. Some access to demand is more personalized, much aimed at subgroups.

[Treheux] There are people who would agree to finance in order to have their programs accepted. It could be a partnership that would paid for the program and not necessarily an individual. The forms of payment may be highly diverse.

[Question] These three aspects have enormous importance because if the public service portion should weaken and if voluntary access wins out, determined necessarily by financial and cultural means, then we are moving toward actual encouragement of inequalities.

[Salles] Access to public service must be equal for everyone; that is, I believe, indispensable. But it seems difficult to me to have pluralistic communication with, alongside the public service, private services on the basis of a uniform collection of receipts. It is unrealistic to think that that could ever happen.

But, at the local level, we will have the means to try to ensure maximum balance.

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## NEW CARBON FIBER TECHNOLOGY USED IN MAKING TELE-X ANTENNA

Stockholm NY TEKNIK in Swedish 25 Aug 83 p 12

[Article by Bert Ola Gustavsson: "The Tele-X Antenna, Masterpiece of Swedish Carbon Fiber"]

[Text] Molndal--Ericsson Radio Systems is now concentrating on carbon fiber. This year the company opened a special factory for production of satellite antennas made from carbon fiber composites.

The masterpiece of carbon fiber technology will be the large receiver-reflector to the antenna for the Nordic Tele-X satellite.

Ericsson Radio Systems was formed at the turn of the year when SRA Communications and the Division of Defense and Space Electronics within the Ericsson group were merged to form a new company.

The company has a newly written agreement with Aerospatiale in France, concerning the sharing of technology within the carbon fiber sector and it also cooperates with the flight division of Saab Scania.

The 1.7-meter-long, dish-shaped receiver-reflector for the Tele-X will be manufactured in Molndal, while the corresponding transmitter-reflector will be made in France.

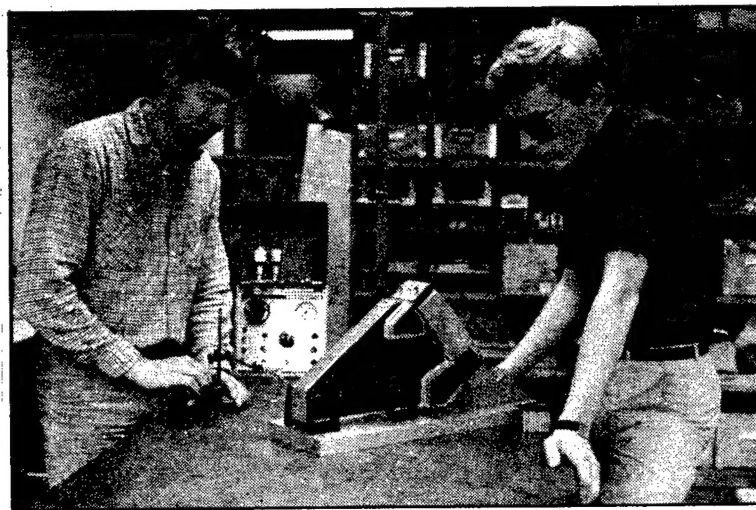
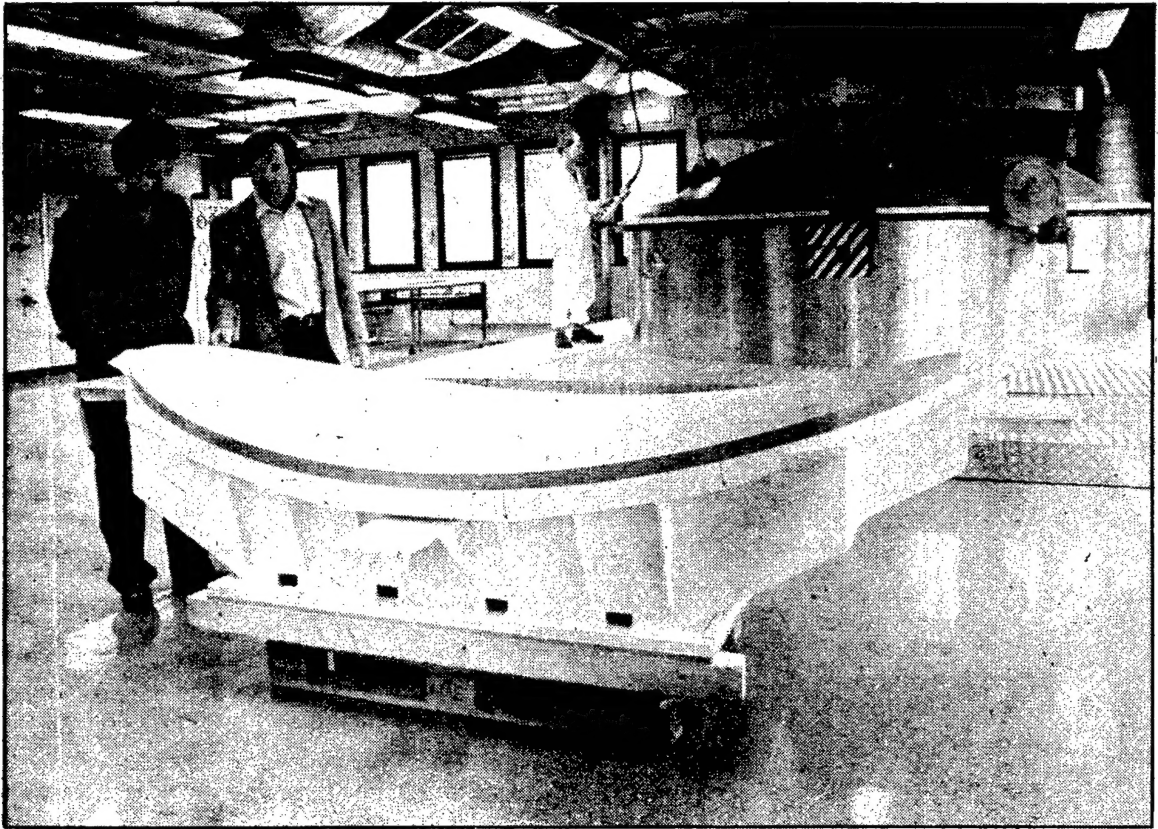
### Finished Model

Today there exists a finished electric model of the antenna reflector and shortly work will begin on producing the instrument which will be coated with carbon fiber.

"Carbon fiber technology is complicated and demands great work efforts during both construction and manufacture," says Nans Magnusson, who is responsible for manufacturing of the antenna.

"The shaping of the form has to be done with a tolerance of a couple of tenths of millimeters. We have found only one computer-controlled machine in this country that can do the job. There is also only one example of the required measuring equipment."

Top-Tommy Goransson (l.) and Hans Magnusson show an electric model of the receiver-transmitter for Tele-X in Ericsson's new carbon fiber factory. In the background Hasse Berntsson at work with the autoclave where the pieces are cured.



Bottom-Controller Leif Andersson (l.) and Bertil Nilsson with a test model of a bracket made from carbon fiber. It will be used in the French-German TV-SAT/TDF-1 satellite.

## Ready Next Year

The instrument is due to be finished next year and then the first carbon fiber models of the reflector can be produced. This will be a job which must be done under tough time pressure since Tele-X will be launched in 1986.

Ericsson has invested 15 million kronor to get the resources for construction and manufacture of the antenna for Tele-X. The new carbon fiber factory has cost 3 to 4 million. The rest will be spent on a measuring room free from microwave echos.

The center of the carbon fiber factory is an autoclave weighing 18 metric tons, which is used to cure the carbon fiber pieces under pressure at a temperature of 180 degrees Celsius. It has an inside volume of 27 cubic meters and can be provided with up to 12 micro-processor controlled measuring points.

## A Substantial Step

The factory is carefully temperature and dust controlled, the humidity also has to be kept around 50 percent.

With this equipment Ericsson can take a substantial step forward in Swedish carbon fiber technology.

The first step towards the use of carbon fiber was taken in 1979 after long experience in manufacturing antennas from various fiberglass-reinforced plastics.

A couple of years ago they brought out their own first test products of carbon fiber, after having gone through a number of different development programs to gain knowledge about the new material.

For the past few years Ericsson has been a member of the production team for the French-German TV-SAT/TDF-1.

Last year a study was completed for ESA [European Space Agency], where they developed and manufactured a test antenna of a new type in carbon fiber. The antenna is intended for the MAM-project, a satellite which will handle, among other things, tele-communications at sea.

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END